Positioned at the crossroads of Asia and the West, both geographically and culturally, Hong Kong is taking advantage of its auspicious place in Asia by reimagining itself not just as a financial and tourism center, but also as a research and biotechnology hub. This sponsored feature will provide the reader with an update on the state of scientific research in the region and a glimpse into the powerful engine that is driving progress there, from basic research to the commercialization of therapeutics and medical devices.

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Hong Kong is a special administrative region of China with a population of seven million. As a former British colony, handed back to China in 1997, Hong Kong still contains a unique blend of East and West. Its educated, multilingual populace speaks Cantonese and Mandarin, while English continues to be the language used in business, education, and research and development. This makes Hong Kong an attractive place for international talent and a bridge between Asia and the rest of the world.

Hong Kong is best known as a financial center and the business capital of Asia. However, biotech is an emerging sector that has been designated a key industry for development. “We have to focus on developing a key area we identify to have huge potential, and grow it to assume a leading position globally. It is well-recognized that Hong Kong possesses what it takes to become a high-tech hub, and we are hoping to unify the efforts of the government, up-stream academia, and mid- to downstream industry,” says The Honorable Chun-Ying Leung, chief executive of Hong Kong, in a recent interview with the Hong Kong-based newspaper, Wenweipo. The Hong Kong Government is determined to promote biotech as a key industry. Six key industries have been developed and intensely promoted, of which four are closely related to biotech, namely innovation and technology, testing and certification, medical services, and environmental industries. The remaining two areas are educational services and creative industries.

Hong Kong Science and Technology Parks Corporation (HKSTPC) exemplifies what can be achieved under this paradigm. “The advantages of performing biotech research and development in Hong Kong are myriad. Under the ‘one country, two systems’ doctrine, Hong Kong has protected intellectual property [IP], internationally recognized enforcement of common law, free media, academic freedom, and a sound financial and banking system which can provide a platform for fundraising. Hong Kong Science Park provides the infrastructure, support programs, and collaboration opportunities to nurture the growth of our biotech industry and to support Hong Kong to grow into a knowledge-based economy,” says Mr. Nicholas Brooke, chairman of HKSTPC. Their 22 hectare Hong Kong Science Park currently provides laboratory and office space to almost 400 technology companies.

Today, there are 250–300 biotechnology companies in Hong Kong, 70 with substantial mainland background. Hong Kong’s total R&D expenditure recently more than doubled from HK$5.9 billion (US$761 million) in 1999 to HK$13.3 billion (US$1.7 billion) in 2010. The number of full time R&D employees also doubled, from around 10,000 to 24,100 during the same period. Government support also comes in the form of the Innovation and Technology Fund (ITF), set up in 1999, which aims to support mainly applied R&D projects conducted by universities, industry support organizations, industry and trade associations, and private sector companies that contribute to the innovation and technology industry. “As of October 2012, HK$7.1 billion (US$916 million) of ITF funding has been approved for 3,066 projects, of which around seven percent went into biotechnology-related applications,” says Miss Janet Wing-Chen Wong, the commissioner for Innovation and Technology.

Professor Albert Cheung-Hoi Yu, chairman of the Hong Kong Biotechnology Organization (HKBIO), emphasizes that this special feature outlining Hong Kong’s biotech capabilities is a strong signal to the international community of where the city is heading. “A number of very active, fast-growing biotech players from the government, academia, and industry are featured. But this is not an exhaustive representation of what Hong Kong has.” Examples of other crucial components of Hong Kong’s biotech include the Hong Kong Medical and Healthcare Device Industries Association, The Hong Kong Association of the Pharmaceutical Industry, Hong Kong Business Angel Network, and the quasi-government run Hong Kong Productivity Council, amongst others. Education-wise The Open University of Hong Kong and the Vocational Training Council are, among other higher and continuing education institutes, supplying biotech talent in Hong Kong. “Many other outstanding professors and researchers also contribute significantly to Hong Kong’s biotech advancement into a globally outstanding research hub,” added Professor Yu.

“With world-class universities, Hong Kong is strong in basic research and making progress in the nurturing of industry. Its unique geographical and political position, and close economic ties to the mainland, allows its biotech industry to benefit from China’s R&D drive,” says The Honorable Regina Suk-Yee Ip Lau, honorary advisor of HKBIO and member of the Executive Council, Government of the Hong Kong SAR. Indeed, Hong Kong is rapidly becoming the chosen location for both global companies who want to access the fast-growing market in mainland China and for Chinese companies wanting to reach the rest of the world.
The Innovation and Technology Commission (ITC) was set up in 2000 to enhance Hong Kong’s innovation and technology capability as an impetus for economic growth by supporting applied research and development, and technology transfer and application, providing technological infrastructure, and nurturing the development of human capital.

“Our basic policy is to create an ecosystem within which the innovation and technology sector can survive and flourish,” explains Miss Wong.

The attraction of Hong Kong according to Miss Wong are its geographical location in Asia, the use of the common law system, the simple and affordable tax system, a clean government, and credible IP protection. Additionally, the region has universities that persistently rank among the top 50 in the world.

Importantly, the living environment of Hong Kong in terms of language, mobility, convenience, and familiarity has created a culture attractive to people from all over the world. “It is a good place for foreigners to connect with businesses in the mainland and Asia,” says Miss Wong. “For big Chinese companies, Hong Kong is a good place to work towards the international market. We are really right in the heart of Asia.”

Despite this, biotech in Hong Kong is a relatively young technology sector. However, health care-related companies, such as pharmaceuticals, medical devices, diagnostics, and traditional Chinese medicine, are growing. “Modernization of traditional Chinese Medicine [TCM] is increasingly showing huge potential and provides the perfect East-West integration that is crucial for Hong Kong’s portfolio,” adds Miss Wong.

“For biotech, proximity to the mainland provides opportunities. Although Hong Kong is relatively small, it shouldn’t be considered in isolation,” states Miss Wong. Hong Kong is partnered with 12 of the 260 State Key Laboratories in the mainland China (with more to come), 10 of which have a biotech-related research focus. ITC, in collaboration with the Research Grants Council, ensures that these laboratories meet international standards with regards to infrastructure, workforce, and research focus.

Miss Wong expects biotech in Hong Kong to flourish and develop in the future. “We are certain that more international partners, including academics and companies, will join us in the future,” she says.

Hong Kong Biotechnology Organization (HKBIO), a charitable biotech industry organization, was established with the objectives of advancing and accelerating Hong Kong’s biotech industry growth by promoting study, research, education, and exchanges in the biotech sector in Hong Kong. “Building an industry requires concerted effort from government, academia, and industry,” explains Professor Yu. “We want to show the international community that Hong Kong is fully committed to building and growing this industry and that our government, academia, and industry are all taking proactive roles in contributing to biotech.”

“HKBIO has extensive connections worldwide, bringing together local companies and potential global partners,” says Dr. Bernard Pak-Li Chan, HKBIO Council Member. Some examples include the signing of memorandum of understanding with the Taiwan Bio Industry Organization and AusBiotech, and the various delegations to build global platforms for industry.

“In general it is hard to attract funding specific for the biotech industry, so part of HKBIO’s mission is to bring in venture capitalists and other funding agents to our industry, so that they will have opportunities to match each other’s needs and resources,” says Professor Wendy Wen-Luan Hsiao, HKBIO treasurer.

“One of the initiatives is to assist our industry to explore the China market. Hong Kong is the gateway to China,” says Professor Yuk-Lam Lo, HKBIO honorary chairman. “It is very easy for us to go into China to do business and utilize the resources, including talent, financial grants, and the future market,” adds Professor Yu. “In China, the demand for medical care, medical diagnosis, and treatments will be huge. The market in America is already saturated, but in China, you cannot calculate how much it might be worth.”

L to R: AusBiotech COO Glenn Cross, Professor Albert Cheung-Hoi Yu, Professor Wendy Wen-Luan Hsiao, and Dr. Bernard Pak-Li Chan at the HKBIO-AusBiotech MOU signing ceremony.
Located at the waterfront of Tolo Harbor adjacent to The Chinese University of Hong Kong in the New Territories, the 22-hectare Hong Kong Science Park, which is managed by Hong Kong Science and Technology Parks Corporation (HKSTPC), was constructed to attract technology firms to base operations and R&D in Hong Kong. Phase 1 of the Park was opened in 2002 with Phase 3 due to be completed in stages from the end of 2013 to 2016.

“Our vision is to help Hong Kong build its capability in technology and innovation development,” explains Mr. E. Anthony Tan, chief executive officer of HKSTPC. “And to turn discoveries and new inventions from an idea or concept into a commercial product or service.”

To enable this, HKSTPC offers state-of-the-art infrastructure and offices for applied R&D activities, and shared laboratories with technical support to help reduce capital investment of R&D companies in product design and development. The five major technology clusters in the Park include electronics, information technology and telecommunications, precision engineering, biotechnology, and green technology. Around 55 of the 400 companies based in the Park work in biotech, employing roughly 800 people. The Park is currently 95 percent occupied; Phase 3 will provide another 50 percent capacity.

Gathering like-minded industries together was crucial to the Park’s design. “One important element of the Park is the clustering effect,” says Mr. Tan. “By focusing on certain technologies we can pool the right companies together who can create new ideas and challenge each other. Among the five clusters, biotech is one of the important sectors for the 21st century,” adds Mr. Tan. “Many of the issues in health and life sciences depend on biotech to provide solutions.”

Andrew Meng-Cheung Young, vice president of Marketing and Sales for HKSTPC, believes the Park works as a bridge between academic research and commercial products or solutions.

“Our vision is to help Hong Kong build its capability in technology and innovation development.”

-Mr. E. Anthony Tan

“We provide a platform to facilitate: we support mature and medium sized companies,” explains Mr. Young. “More importantly, one of our main focuses is to support the startups, nurturing them and helping them with financial and non-financial support.”

HKSTPC’s incubation programs provide not only low-cost accommodation, but also management, marketing, financial, and technical assistance during the crucial first two to four years in the lives of startup companies. Incubatees can apply for a financial aid package worth up to HK$860,000 (US$112,000) over a four-year period. Beyond this, HKSTPC also implements a small and medium-sized enterprise program which helps companies with financial and legal services, office space, shared facilities, and more.

Beyond this, Hong Kong Science Park is an important new part of Hong Kong’s infrastructure as it turns itself into a regional hub for innovation and technology. “Many think of Hong Kong as a tourist spot, a trading center, and a logistics center. But not yet as a technology center. So we really need to focus on making a difference at the Park. We want to show the world that Hong Kong is capable of excelling in developing selected technologies,” explains Mr. Tan.

Mr. Young believes that the Park will be part of the community. “We serve the local community and also act as a platform for overseas technology companies to capture the Asia market,” he explains. “We also enable Chinese technology companies to use Hong Kong as a base for their own internationalization.”

Moving beyond Hong Kong itself, HKSTPC works closely with Chinese authorities at the national and provincial levels, as well as with a technology park in Guangzhou, mainland China. HKSTPC is also currently improving shipping methods on both sides of the Hong Kong-China border to allow for the smoother exchange of samples between R&D laboratories.
“It’s very important to collaborate with China,” agrees Mr. Tan. “It’s an area from which we can draw a lot of resources in terms of technicians, engineers, and scientists. We can also leverage Hong Kong’s ability to attract the best and brightest from around the world. HKSTPC can help develop breakthrough technologies using Hong Kong’s unique environment.”

Mr. Young is looking towards a bright future for HKSTPC. “Hong Kong is not yet known as a place for science and technology development. But some very innovative technology developers and entrepreneurs are willing to take the plunge. Hong Kong is much more than a physical location: it is a living community—that is what Hong Kong Science Park is all about.”

Multigene Diagnostics, Ltd.

Multigene Diagnostics, Ltd. (Multigene) is a spin off from the City University in Hong Kong and the first biotech company admitted into the Incu-Bio Business Incubation Program of HKSTPC in 2009. The company is developing a range of molecular diagnostic assays using multiplexed fluorescence and array-based platforms for detection of infectious pathogens and genetic diseases, and for early screening and mutation typing of cancers.

“We are in a unique position to rapidly convert biomedical research into molecular diagnostic products for commercialization,” states Dr. Lawrence Chi-Hung Tzang, executive director of Multigene. “We are collaborating with universities in Hong Kong and mainland China, where the government has significantly increased the investment in research and development in recent years.” In addition to its R&D capability, Multigene has established an ISO15189:2007 accredited medical laboratory in Hong Kong Science Park, the first in the private sector in Hong Kong. “All our products are validated and offered as clinical testing services to local physicians and diagnostic laboratories. This will significantly shorten the time it takes when the products go through clinical trials and regulatory processes of SFDA [China’s State Food and Drug Administration] required for entering the mainland market,” explains Dr. Tzang.

The rapidly growing Chinese economy and the increased purchasing power of the population, coupled with an increased awareness of wellness and preventive medicine, and the desire for cutting-edge products and services, make the future outlook extremely positive for molecular diagnostics in the China market. “We have a number of products that are in great demand in China, such as the human papillomavirus (HPV) detection and genotyping kits for cervical cancer screening,” says Dr. Tzang. “The other products that are ready for market include a multiplexed detection kit for 10 common sexually transmitted disease pathogens, an ovarian cancer screening kit, and a series of mutation detection kits for personalized cancer therapy.” Multigene plans to set up a manufacturing unit within a year and establish a marketing and sales network in mainland China.


Bio-Cancer Treatment International, Ltd. (BCT), a local biotech startup, was established in 2001. Dr. Paul Ning-Man Cheng, CEO of BCT led the project to develop pegylated recombinant human arginase (BCT-100), together with Polytechnic University’s (PolyU) Professor Yung-Chung Leung and Associate Professor Dr. Wai-Hung Lo.

“BCT tests the hypothesis that human recombinant hepatic arginase I, after suitable pegylation to lengthen its circulatory half-life, can safely deplete plasma arginine for a prolonged period of time,” explains Dr. Cheng. “Once this state of arginine depletion is achieved, we test whether it induces remission in certain cancers that are auxotrophic for the amino acid arginine.” The goal is to provide a cancer treatment that is free of the side-effects usually associated with cancer chemotherapy.

Dr. Cheng believes that BCT’s research is particularly relevant in China. Their main target is liver cancer, which is very prevalent in the region. “Over 45 percent of the world’s liver cancer cases are found in China and Southeast Asia,” says Dr. Cheng, whose project was incubated at PolyU with funding from a private venture capitalist group and Hong Kong’s Innovation and Technology Commission.

Following optimistic preclinical results, BCT plans to commercialize the new drug. Phase 1 clinical trials for liver cancer treatment have been completed, with phase 2 starting this year alongside phase 1 trials for refractory lymphomas and leukemia.

“This is the first homegrown drug that has gone through the United States’ Food and Drug Administration process and is cleared for use on humans in the U.S. and Hong Kong,” says Dr. Cheng. “We have good clinical data and, most importantly, there are no adverse side effects.” This is an achievement which has been hailed as an important milestone in the development of the biotechnology and pharmaceutical industry in Hong Kong.

Lee’s Pharmaceutical Holdings, Ltd. www.leeapharm.com

Lee’s Pharmaceutical Holdings, Ltd. (Lee’s Pharm), is a public biopharmaceutical company that has operated for over 18 years in China, carrying out drug development and clinical research, as well as regulatory, manufacturing, sales, and marketing activities. Currently, 12 of its products are marketed in mainland China, with 30 more under development. The company’s focus includes cardiovascular and infectious diseases, dermatology, oncology, gynecology, and ophthalmology, among others.
One product that Lee’s Pharm’s researchers are excited about is Yalaferon®, a topical interferon. “Interferon is an effective antiviral agent produced by our own bodies but, being a protein, is unstable outside of the body,” explains Dr. Benjamin Xiao-Yi Li, CEO of Lee’s Pharm. “Our technology allows the protein to be stable at temperatures up to 20°C, suitable for topical application. Clinical studies have indicated its successful use for genital herpes, genital wart, herpes zoster, and cervicitis. A recent study showed eradication of high-risk HPV infection in some patients. Since HPV infection can lead to cervical cancer and has become an important women’s health issue in China, we are participating in a study conducted by the Chinese Ministry of Health to advance HPV prevention and treatment.”

Another promising treatment is the anti-platelet drug, Anfibrade, which has been 14 years in development. “It is a glycoprotein 1b antagonist with much lower bleeding risk,” explains Dr. Li. “This is particular relevant in China because our diet makes native Chinese more prone to bleeding. Anfibrade is the first product with a novel mechanism of action to be advanced to phase 2 clinical studies.” Currently, the drug is being tested for treatment of acute ischemic cardiac syndrome, with results expected by late 2013.

High-quality research and development has led to Lee’s Pharm being ranked second in the “Best Small-Cap Company in China” ratings by Finance Asia and to be included on the Forbes Asia’s 200 Best Under A Billion companies list.

“Hong Kong has easy access to [the Chinese and Japanese] markets... and is a good location for partnerships with key opinion leaders from the region.”

-Mr. Paul Young

Hologic, Inc. www.hologic.com

Hologic, known as “The Women’s Health Company,” concentrates solely on women’s health care needs including osteoporosis assessment, HPV testing, fetal fibronectin tests, breast magnetic resonance imaging solutions, and improved Pap Tests, among others. “The most important area for us is breast health—breast cancer screening, diagnosis, and treatment,” explains Mr. Paul Young, Vice President of Hologic and General Manager of Asia Pacific. Hologic has created breast cancer screening products specifically for the Asian population through research collaborations with Hong Kong healthcare professionals.

While Hologic’s world headquarters is in Boston, its Hong Kong branch in Hong Kong Science Park acts as its Asia headquarters. Hong Kong was chosen because it is the “closest to the biggest markets in Asia: China and Japan,” explains Mr. Young. “It has easy access to both markets, provides easy shipping in and out of Asia, and is a good location for partnerships with key opinion leaders from the region.”

After careful consideration, Hologic chose Hong Kong Science Park for both its facilities and accessibility to other countries. “Also, there are many similar companies in the Park that we can talk to, making it easy to find commercial partners,” says Mr. Young.

Hologic plans to expand into other areas, including men’s health by forming key partnerships with universities in both China and Hong Kong. “We work with universities and university hospitals directly because they are our customers,” explains Mr. Young. “And with the Chinese Society of Radiology on education in breast cancer screening and diagnosis.” Now with over 800 employees, Hologic’s growth in China has been over twenty percent per year, an indication that Hong Kong is the perfect base for their operations.

PuraPharm www.purapharm.com

PuraPharm, a pioneering company dedicated to the internationalization and modernization of traditional Chinese medicine (TCM), was founded in 1998. With an investment of over HK$200 million (USD$26 million) in its state-of-the-art TCM research and production facilities in China’s Guangxi province, PuraPharm is today a frontrunner in the industry. Their ISO-17025 (CNAS certified) in-house laboratory is regarded as one of the best TCM manufacturing facilities in Asia.

“It is very exciting to see how Chinese medicine is developing in China,” says Mr. Abraham Yu-Ling Chan, PuraPharm’s chairman. “Over the past decade, Hong Kong has not been leveraging its knowledge resources to modernize Chinese medicine. But in the next five years I believe we will see a big change, as TCM is becoming very popular here. Hong Kong is a very successful medical hub. It has credibility, attracts international scientists, and the work done here is of an international standard.”

PuraPharm’s main business supplies around 400 hospitals in China. The company produces concentrated TCM granules in sachets from prescriptions by professional practitioners. “It’s not just modernizing TCM to add convenience,” says Mr. Chan. “The granulation process allows us to standardize the treatments and test for heavy metals, making them safer.” Crucially, PuraPharm is the only foreign-funded enterprise among six so-called Pilot Manufacturers of Concentrated Chinese Medicine Granules selected by China’s SFDA. It has also been the only Chinese medicinal granule supplier of the Hospital Authority of Hong Kong for the past seven consecutive years.

Introducing TCM via PuraPharm’s granules to a Western audience is next. “We have to show them that it’s safe, that we have a quality control process,” says Mr. Chan. “The next step is to demonstrate the effect of these products by doing clinical trials.” With this in store, PuraPharm will no doubt continue to grow.
The non-profit Hong Kong Trade Development Council (HKTDC) was established in 1966 as the international marketing arm for Hong Kong-based traders, manufacturers, and service providers. With over 40 global offices, including 11 on the Chinese mainland, HKTDC’s mission is to create and promote business opportunities for Hong Kong worldwide.

“The major focus of our work is to organize the trade fairs in Hong Kong and to bring our Hong Kong companies to overseas markets,” says Mr. Ralph Shui-Sang Chow, Director of Product Promotion. HKTDC attracts more than half a million buyers to over 30 trade shows it holds annually. It features over 1.2 million registered buyers and 120,000 suppliers from Hong Kong, mainland China, and the rest of the world in its online marketplace, and publishes 15 product magazines with a readership of over five million. By organizing around 800 Hong Kong promotional events globally, reaching nearly 100,000 people each year, HKTDC also brings Hong Kong to the world. Six hundred international business missions visit Hong Kong a year with the assistance of HKTDC. Additionally, services such as HKTDC Business Matching help to connect companies who want to find the right partners.

Biotech is a key industry for Hong Kong and has been designated a “pillar of growth” by the government. HKTDC currently runs the annual Hong Kong International Medical Devices and Supplies Fair and receives biotech missions from myriad countries looking for collaboration. The organization also brings Hong Kong biotech companies to the rest of the world. Annually, it takes around 10 to 15 companies to the BIO International Convention, held in the United States. Last year, HKTDC also took biotech companies and organisations to Boston, calling on a medical school and the Massachusetts Institute of Technology to promote partnerships in biotech.

HKTDC’s work related to biotech doesn’t stop there. One anchor event for HKTDC is the Business of Intellectual Property Asia forum (BIP Asia), jointly organized by HKTDC and the Hong Kong Design Centre. “Biotech has the type of IP that needs a lot of legal protection and also financial services to facilitate its transaction,” says Mr. Chow. “BIP Asia provides a platform to help all companies come together and facilitate the transaction.”

Importantly for research and development in Hong Kong, HKTDC works closely with local R&D institutions to facilitate commercialisation of local innovation and technology by providing different outreach and marketing platforms. Mr. Chow explains: “We organize seminars and trade forums for them to publicize their latest achievements in the technology field, such as the ongoing series of Nanotechnology Forums co-organized with NAMI [the Nano and Advanced Materials Institute Limited] to promote their latest technology projects.” To this end, Parker Robinson, the head of Corporate Communication at HKTDC, states that HKTDC also works closely with the Hong Kong Science and Technology Parks Corporation (HKSTPC). “Besides co-organizing promotional activities, we are keen to feature success stories of HKSTPC incubatees to highlight the capabilities and achievements of the local R&D sector,” he says.

Relations with China are crucial for HKTDC, particularly with regard to biotech, an area of focus in China’s 12th Five-Year Plan. “We have very close working relationships at many different levels in China...we believe there is tremendous potential for further collaboration between Chinese and overseas companies.”

-Mr. Ralph Shui-Sang Chow

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Chinese delegations visiting Hong Kong are also an important part of facilitating business. To many Chinese companies, Hong Kong is their springboard to the global market. “Almost weekly, Chinese delegations come to Hong Kong,” explains Mr. Chow. “We organize promotional activities and seminars to help them reach their potential buyers and clients, and arrange networking functions and business matching services to connect them to the world.” Mr. Chow continues, “Hong Kong also provides sophisticated professional legal, financing, and accounting services that facilitate Chinese-overseas investment partnerships.” A case in point was a Chinese delegation brought from Jiangsu province to Los Angeles last year.

“We believe there is tremendous potential for further collaboration between Chinese and overseas companies,” concludes Mr. Chow. “And Hong Kong plays a very important role as a facilitator and also as a platform for these buyers and sellers to conclude their negotiations.”
Invest Hong Kong (InvestHK), a department of the Hong Kong SAR Government, is responsible for helping overseas and mainland Chinese businesses to set up and expand in Hong Kong. These businesses are from a broad range of industries, including biotechnology, which has been identified by the Government as a growth industry under the “Innovation and Technology” pillar.

“Our goal is to attract companies that bring new expertise to Hong Kong, so biotech is an important sub-sector for us,” says Mr. Simon Galpin, director-general of Investment Promotion for InvestHK. “We have a lot of the world’s biggest companies already very well established here. But we’re keen to attract smaller, high-growth firms, including startups. Although these companies may only employ a few people at the outset, they need to use local service providers in Hong Kong. That in turn provides local job opportunities and has a spill-over effect.”

Founded in 2000, InvestHK strives to promote Hong Kong as a world-renowned center for business and a place for strategic investment. InvestHK provides information for companies thinking about entering Hong Kong and relocation advice for expatriates, including housing, schooling, and more. InvestHK also helps with business development, facilitates introductions to contacts and service providers, and provides marketing and public relations for a company’s launch and expansion. This year InvestHK will help over 300 companies set up and expand in Hong Kong.

One unbeatable advantage to conducting business in Asia’s premier business city is Hong Kong’s proximity to mainland China. Crucially, Mr. Galpin is keen to emphasize the meaning of ‘one country, two systems’ in practice. “Why is Hong Kong unique?” he asks. “We explain those enduring advantages that haven’t changed since the 1997 handover: Rule of law, low and stable taxes, free movement of information, availability of capital, and people.”

“Second, we talk about the opportunities that arise or have arisen since Hong Kong reverted to Chinese rule,” adds Mr. Galpin. “On the business-to-business side, the fact is that we have hundreds of mainland companies coming here who want to use Hong Kong to go global. Hong Kong is a meeting point.”

A third advantage for biotech companies is that “we really are at the doorstep of the huge Chinese market. That is something that other competitors cannot challenge. They can’t move their countries closer to China!” quips Mr. Galpin. “We sit next to the world’s second biggest economy; if you are developing products that are ultimately going to be used in mainland China, it makes sense to be close to that market,” he says. Hong Kong’s location in the heart of Asia also makes countries like Japan, Korea, and all of South-East Asia easily accessible. Many of the continent’s key markets are less than four hours’ flight away and half of the world’s population is located within five hours’ flight from Hong Kong.

A unique advantage for biotech in Hong Kong is its strong traditional Chinese medicine sector. “Hong Kong practitioners understand Chinese medicine very well and yet many of our practitioners have also studied Western medicine, so they are able to combine the Chinese and Western traditions together,” explains Mr. Galpin. “I am certain that this will result in many breakthroughs in the coming years.”

Beyond this, there are several other key advantages for companies setting up in Hong Kong. The city is a cosmopolitan one, able to attract talent worldwide to work and study. It has world-renowned universities that create top-level research and produce some of the best graduates globally. Businesses can draw also on talent from mainland China.

Mr. Galpin’s advice for companies thinking of locating to Hong Kong is, above all, to come and visit. “Come and see the facilities we have. Meet some of the companies already doing business and research here—it is a great way to understand the opportunities. And use our services as much as possible because they’re all free, customized, and confidential,” he says.

There are, of course, challenges, both in terms of attracting investment in biotech and encouraging small companies or startups to set up in Hong Kong. “People know Hong Kong as a leading financial center and there are many Fortune 500 companies here,” explains Mr. Galpin. “But smaller companies sometimes assume that this is a market that isn’t for them. We see Hong Kong as the ideal starting point when foreign companies come into Asia, particularly those from North America and Europe.”

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-Mr. Simon Galpin
The Hong Kong Applied Science and Technology Research Institute (ASTRI) was set up in 2000 funded primarily by the government run Innovation and Technology Commission (ITC). Its three-fold tasks are to perform research and development for transfer to industry for commercialization, to develop technical human resources, and to bring industry and university R&D assets together. The organization’s overarching goal is to help stimulate growth of technology-based industry in Hong Kong, including the health care sector. To this end, ASTRI focuses on five technology areas: communications technologies, consumer electronics, integrated circuit design, materials and packaging technologies, and biomedical electronics. It currently has a workforce of over 500 people, has close to 300 granted patents in China, the US, and other parts of the world, and has completed more than 300 cases of technology transfer in the form of technology licenses, research contracts, and more.

ASTRI’s Bio-Medical Electronics (BME) team was formed three years ago to expand information and communication technologies into biomedical applications required by the Hong Kong community and industry. “BME works by interacting with health care and medical professionals and users to ask how R&D might help enhance their professional practices and applications,” explains Dr. Francis Chee-Shuen Lee, vice president and R&D director of the Bio-Medical Electronics Team. “Interacting with industry takes place through individual contacts, forums, and conferences. BME also interacts with academic organizations to explore linking applications based on their upstream scientific or engineering outputs.”

In the near term, BME’s core focus is in telecare, digital pathology, and traditional Chinese medicine. One specific project under way is the development of instrumentation and methodology for amblyopia (“lazy eye”) treatment. “In China, three to five percent [of the population] has this problem, mostly children,” says Dr. Lee. In the past, eye-patches have been the only means of training the patient’s weak eye (a method only effective for children under nine years old). “But our method provides specifically defined visual hardware and application software,” says Dr. Lee. “It includes careful evaluation and analysis of the condition of the patient’s weak eye. Data show improvements in patients 10 years and older, even adults, using the training.” Currently, BME is in the process of working with an industrial partner in China to commercialize the technology.

The Nano and Advanced Materials Institute Limited

The Nano and Advanced Materials Institute Limited (NAMI) was established in 2006 with government and industrial funds and has an annual budget of around US$20 million. The organization’s staff of 110 is located at the Hong Kong University of Science and Technology (HKUST) and the Hong Kong Science Park, with laboratories in both locations.

NAMI, the only nanotechnology center in Hong Kong, conducts market-driven, demand-led development of nanotechnology and advanced materials. Its primary goals are to develop nanotechnology, to act as a focal point for market-driven R&D, and to train human resources to meet the future needs of both Hong Kong and the Pearl River Delta region in mainland China. NAMI focuses on five market sectors: sustainable energy, construction/building materials, environmental technologies, display and solid-state lighting, as well as biotechnology and health care products. In addition to in-house R&D, it funds projects and collaborates with researchers at universities in Hong Kong and across the world.

NAMI has worked with academia to come up with important products, including oral capsules for the delivery of insulin and other molecules such as isoflavone, and engineering quality assurance solutions in the manufacture of Chinese herbal medicines.

“Nanotech, one area that is important to us is Chinese herbal medicine,” says Professor Ka-Ming Ng, CEO of NAMI and Chair Professor of Chemical and Biomolecular Engineering at HKUST. Another important project is a nanopreparation for the topical treatment of limb injuries. Local physicians have successfully used topical herbal pastes and patches to heal injured bones for hundreds of years. Research conducted by the Chinese University of Hong Kong, HKUST, and NAMI has identified key herbs that have healing effects through inflammation control, angiogenesis, and bone stimulation. A user-friendly patch developed to topically deliver the nanomized active ingredients has shown promising results.

“Products derived from biomaterials and related processing technologies ranging from biofuels to medical devices are expected to significantly impact our daily lives. NAMI is committed to contributing advances in this market sector,” stresses Professor Ng.
City University of Hong Kong (CityU) is a dynamic higher education institution founded in 1984 that provides professional education and problem-driven research for the benefit of society. It has taken giant strides over the last few years and is now placed in the top 95 in the Quacquarelli Symonds (QS) World University Rankings 2012 and 12th in the QS Asian University Rankings 2012.

Well-known for its engineering program, which was ranked 32nd in the Academic Ranking of World Universities published by Shanghai Jiao Tong University in 2012, today the University is ramping up its life science and biotech presence, using its strong record of academic achievement as leverage.

“Globalized higher education in the 21st century will be characterized by role differentiation,” CityU President Way Kuo explains. “Each university should look for niche areas in order to impact higher education. With life science and biotech taking root in Hong Kong, and to leverage our existing profile of neuroscience research, CityU is expanding into veterinary medicine and biomedical engineering.”

Among the top talents recently recruited to CityU’s new biomedical engineering program is Professor Ying Li (see p. 1649) who joined the department in 2009 from the University of Michigan in the U.S. Ten other faculty members have been recruited lately from such institutions as the Massachusetts Institute of Technology and Princeton University.

A key factor in CityU’s expansion into life science and biotechnology, and its ability to attract both professors and students from across the world, is its international outlook. Half of the faculty teaching the 20,000 students on campus are from overseas, and CityU aims to have 50 percent of its students spend at least one semester abroad at one of its many partner institutions, such as the University of California, Los Angeles, University of New South Wales in Australia, and Japan’s Tohoku University.

In 2014, CityU hopes to launch a veterinary school in collaboration with Cornell University in the United States, with the objective of having the first American Veterinarian Medical Association-accredited veterinary program in Asia. The school will provide both undergraduate and postgraduate veterinary training, clinical training, and research into infectious diseases. It will address public health issues, the environment, and human-animal relationships.

With around 75 percent of human diseases—including severe acute respiratory syndrome (SARS) and avian influenza—originating in animals, Professor Kuo believes the new school will “add tremendous value to society.”

Dr. Michael I. Kotlikoff, Dean of the College of Veterinary Medicine at Cornell, visited CityU in October for further discussions, agrees that food safety and food security are important issues in Hong Kong and mainland China.

Producing high-quality milk, for example, requires “not only equipment, investment, and cows, but also veterinarians,” Dr. Kotlikoff says.

Crucially, Beijing’s Tsinghua University will partner with CityU in developing the veterinary school’s undergraduate program. The idea, Dr. Kotlikoff says, is to “train the trainers who will then go back and really impact the mainland.”

Meanwhile, CityU’s international outlook represents a perfect bridge between the East and West for its many innovative faculty members.
Professor Paul Kim-Ho Chu
APS, AVS, IEEE, and HKIE Fellow, Chair Professor of Materials Engineering, Department of Physics and Materials Science

Professor Chu relocated to a new 500 m² laboratory three years ago, focusing on materials and plasma surface engineering research in CityU's Department of Physics and Materials Science. It is the only lab of its kind in Hong Kong. His diverse research activities span plasma science and engineering, ion implantation, surface modification, functional thin films, biomaterials, semiconductor materials and processing, optoelectronic materials, and nanotechnology.

Professor Chu’s innovative applied research and industrial applications in plasma processing and instrumentation have resulted in one European, seven Chinese, and 12 U.S. patents. Current research activities include an improved spinal correction rod. “Usually nickel in the rod will diffuse, causing allergies in the patient,” explains Professor Chu. “We keep the mechanical properties of the original rod, but prevent nickel from leaching out by adding a protective coating.” Following successful clinical trials, he is currently in talks with an industrial sponsor about licensing.

Hong Kong’s proximity to China is an advantage, says Professor Chu, who just received 6.5 million RMB (US$1.04 million) in research grants from China to develop biomedical products over the next five years. In total, he has been granted over US$14 million in research funding from agencies and companies. Professor Chu is ranked number one in Hong Kong for research output—producing around 100 papers per year—and is in the top 100 worldwide in materials science according to Essential Science Indicators, based on the number of citations.

Professor Shuk-Han Cheng
Department of Biology and Chemistry

“CityU’s environment is highly conducive to interdisciplinary research,” says Professor Cheng, who joined the university in 1997. “I work with engineers or physicists so that I can produce things that I could never create on my own.” While some universities separate disciplines into different buildings, CityU has disciplines such as biology and engineering based in the same place. “This means you interact more with your colleagues and can build up collaborations by getting to know the person. It is much more solid in terms of interaction and much more fulfilling,” says Professor Cheng.

This trend in interdisciplinary collaboration has also extended to student interactions. Three CityU students from mechanical engineering, marketing, and accounting backgrounds have recently won international business competitions based on a CityU student’s doctoral research, and now boast multinational companies among their startup’s clientele. Professor Cheng has also branched out into regenerative biology through her interdisciplinary work. Pioneering research includes looking into the role of Iroquois genes in vertebrate retinogenesis and cardiogenesis.

Professor Ying Li
M.D. (Beijing), FAGA (U.S.), Department of Biology and Chemistry

Chinese-born Professor Li was educated at Beijing Medical University before becoming a general surgeon and oral-maxillofacial surgeon at Nanjing Medical School in China. He joined CityU in 2009 after two decades at the Department of Internal Medicine at the University of Michigan as an associate research professor. He has received over US$3.8 million in research grants from the National Institute of Neurological Disorders and Stroke in the U.S. His research interests include brain targets for chronic pain, central nervous system sensitization and plasticity, sensory signal transduction in the vagal primary afferent neurons, and vagus nerve stimulation therapy.

“CityU supports neuroscience very well,” says Professor Li, who currently has laboratories on the CityU central campus and the southern city of Shenzhen in the Chinese mainland. “What we’re doing is unique, as very few laboratories are investigating brain cortex synaptic plasticity and vagal afferent neural control of chronic pain using an in vivo model.”

Professor Wen-Jung Li
Department of Mechanical and Biomedical Engineering

Professor Li completed his Ph.D. in aerospace engineering at the University of California, Los Angeles, and worked at The Chinese University of Hong Kong for more than a decade before joining CityU last year. His research interests range from MEMS sensors to nanobiotechnology and electrokinetic nano-assembly.

“MEMS/nano-based biotech research in Hong Kong is expanding,” says Professor Li. “In the early 2000’s, only a few research groups in Hong Kong were focused on using MEMS technology for developing motion-sensing technologies and microfluidic systems. In the past five years, based on the proposals funded by the Hong Kong Research Grants Council, many research groups in Hong Kong are now working on lab-on-a-chip technology—which combines MEMS and biomolecular detection technologies—for chemical or biological detection.”

Professor Li’s group also makes advances in micropower generators, microcell grippers, and carbon nanotube sensors. They have received worldwide recognition based on a number of citations and awards from flagship IEEE international conferences. Professor Li’s current research using optically induced electrokinetics as a possible technology to biologically mark cancer cells has recently received a joint Croucher Foundation-Chinese Academy of Sciences grant.
The Hong Kong Polytechnic University (PolyU) is a pioneer in application-oriented education and research within Hong Kong. Granted full university status in 1994, PolyU is today the territory’s largest government-funded tertiary institution in terms of student headcount, serving the practical needs of both the local community and the wider world. Demonstrating innovation, as of mid-2011, PolyU had over 300 patents granted and 520 pending.

PolyU is actively engaged in two biotech Areas of Excellence (AoEs), supported by the University Grants Committee (UGC) to spearhead development in research areas where Hong Kong competes internationally. It has been awarded funding for research in Chinese Medicine and Further Development as well as for the support of its Institute of Molecular Technology for Drug Discovery and Synthesis.

Areas of strength at PolyU include traditional Chinese medicine (TCM) modernization, food safety, myopia research, and biomedical ultrasound. One high-profile drug discovery project is the development of a new cancer drug that starves tumor cells through the depletion of arginine (a key nutrient for many cancer cells) and is showing great promise in clinical trials. On the food safety side, a demand for modern testing facilities led to the establishment of the Food Safety and Technology Research Center, hosted by the Department of Applied Biology and Chemical Technology.

The global population is becoming progressively more myopic... It’s no longer just a national or Asian problem.

-Professor Chi-Ho To

Scholars Program in which 50 top Chinese Ph.D. graduates work in Hong Kong (half of their salaries are financed by the mainland government), and the HK Ph.D. Fellowship Scheme, established by the Research Grants Council in 2009, which aims to attract the world’s brightest students to study in Hong Kong and has many applications originating in China. PolyU is actively involved in both schemes.

Food Safety Technology

The Food Safety and Technology Research Center, hosted by the Department of Applied Biology and Chemical Technology, has won several awards for its work in improving food safety in Hong Kong. Dr. Ka-Hing Wong and Professor Samuel Chun-Lap Lo of the Department of Applied Biology and Chemical Technology, and Dr. Derek Siu-Wing Or of the Department of Electrical Engineering have all won Gold Awards in the International Exhibition of Inventions of Geneva. Professor Lo and Dr. Or’s collaborative invention is a portable and fast device for rapid identification of food-borne microorganisms. Dr. Wong was also awarded the Young Investigator Award of the 2011 International Conference on Food Factors.

“Food Safety has been a major concern in Hong Kong, where most of the fresh food is exported from mainland China. We cannot control the source, so contamination is a big concern,” explains Dr. Mo Yang, associate professor in the Interdisciplinary Division of Biomedical Engineering and a core member of the Food Safety and Technology Research Center, the first of its kind run by a higher education institution. The Center aims to raise the standards of food safety by providing research, consultancy, and training services to food industries in Hong Kong and the Pearl River Delta Region.

PolyU focuses on both developing devices and promoting food safety knowledge that can be used by the government, public, and the catering industry. This year, PolyU hosted the annual 2012 Functional Food Symposium (functional food, explains Professor Lo, refers to “food that
has ingredients with specific functions that prevent diseases”.

Professor Kwok-Yin Wong, Chair of Chemical Technology and Dean of the Faculty of Applied Science and Textiles, researches fluorescent biosensors and electrochemistry. His work includes the use of environment-sensitive dyes in the construction of protein-based biosensors. “Instead of using really expensive instruments to detect food contamination, we work to prepare agents that register unwanted contaminants by means of biosensors,” explains Professor Wong. “These are ideal for on-site food safety inspections at the front line of quality control. We can bring [the testing device] in a briefcase. By contrast a full food safety lab is very expensive.”

For students of food safety, the advantages of studying at PolyU are plentiful. “We provide opportunities to place our students in the field, actually on site,” points out Wing-Tak Wong, Director of Food Safety and Technology Research Centre, Department of Applied Biology and Chemical Technology. “Some of our arrangements are in China, particularly with government establishments. Students can help serve as ambassadors between China and Hong Kong, improving two-way communication.”

“Food safety testing and related research is now expanding in Hong Kong,” adds Dr. Yang. “There is a big demand for portable and rapid food safety screening devices.” Dr. Yang has developed a sensitive nanobiosensor device that can detect pathogen contamination at only 10 colony forming units per milliliter, within 30 minutes. He is also developing organic polymer/semiconductor-based field effect transistors (bio-FETs) for food pathogen detection. “The bio-FET is a promising approach for label-free, rapid, and direct detection of biological targets. It directly measures the conductance change when food pathogens bind to the detector surface,” he explains.

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\text{Instead of using really expensive instruments to detect food contamination, we work to prepare agents that register unwanted contaminants using biosensors.}
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-Professor Kwok-Yin Wong

The Nature and Nurture of Myopia

PolyU’s Center for Myopia Research was established in 1998 as an area of strategic development that later became a Niche Area of Research, with total funding of HK$34 million (US$4.4 million).

“The global population is becoming progressively more myopic, possibly because of the extensive amount of close work that we do. It’s no longer just a national or Asian problem—it is becoming a world problem,” explains Professor Chi-Ho To, associate head of the School of Optometry. “Although Myopia research is a PolyU niche area, we break boundaries; we involve microbiologists, geneticists, protein researchers, and physiologists,” he adds. “It is really a translational and interdisciplinary research area.”

Professor To’s team works on the biological and optical signals that regulate normal and myopic eye growth. They study the growth signals in the eye during development “using proteomics approaches in which thousands of proteins can be visualized and compared,” says Professor To. “My lab has also demonstrated for the first time that the retina is capable of simultaneously integrating out-of-focus (defocus) images both in front of, and behind, the retina and guiding eye growth accordingly. This is an important finding in that it opens up a new opportunity to control myopia by manipulating optical inputs.” Professor To and colleagues have carried out a randomized clinical trial on myopia control using a novel contact lens called a defocus-incorporated soft contact (DISC) lens and have found that myopia progression can be retarded by 50 percent using this device. They are now optimizing the treatment by enhancing the dosage of anti-myopia optics.

Professor Shea-Ping Yip, associate head (Research) of the Department of Health Technology and Informatics, is looking at myopia from a genetics viewpoint. In Hong Kong, “the proportion of the population undergoing myopic degeneration, which can cause severe vision loss and even blindness, is going to be quite high,” says Professor Yip, who completed his Ph.D. in Human Genetics at the University College London. He has collaborated with other international researchers in the Consortium of Refractive Error and Myopia (CREAM). “When I first started working in this area, there were only a few groups studying the genetics of myopia—now there are up to 40 groups in CREAM collecting data,” he says. “The trend is to look for genes and environmental factors that make us more likely to have myopia. We take a strongly multidisciplinary approach and join forces with scientists in other disciplines to solve common problems.”

Biomedical Ultrasound

“Ultrasound research in PolyU has been expanding dramatically, in the development of new technologies as well as in using ultrasound to study a variety of research questions,” says Professor Yong-Ping Zheng, acting head of the Interdisciplinary Division of Biomedical Engineering. “My team has made advances in a number of areas in biomedical and rehabilitative ultrasound, with a focus on the development of novel techniques for the assessment of soft tissues, including elasticity measurement, 3-D ultrasound imaging, and functional assessment of muscle, and their application through collaboration with researchers in different fields.”

Professor Zheng’s research and development in soft tissue characterization and elasticity measurement is internationally known, particularly for the team’s novel patented techniques of ultrasound indentation, water-jet indentation, and air-jet indentation.

One especially interesting technique developed recently is the radiation-free assessment of scoliosis using 3-D ultrasound imaging, trademarked as Sciloscan. Previously, children with scoliosis could not be adequately screened or monitored for the progression and outcome of treatment as X-ray imaging created a radiation hazard. But with the new technique, developed based on PolyU’s pioneering research in musculoskeletal 3-D ultrasound imaging, they can be assessed frequently. A local company has licensed three related patents.
from PolyU. Developed with a matching grant for commercialization purposes supported by the Government’s Innovation and Technology Fund (ITF), a prototype is now ready for testing and clinical trials. The system not only generates an X-ray–like projected image for quick assessment, but also a 3-D virtual model of the spine in order to assess deformities in different visual planes.

The Scolioscan technology is important in Hong Kong—over three percent of children there are known to have scoliosis—and also globally, Professor Zheng suspects that more scoliosis sufferers will be diagnosed as more are screened using the new technique.

Another novel ultrasound technique for quantitative dynamic assessment of muscle function is called sonomyography and measures real-time changes in muscle architectural parameters. It can also be used as a human-machine interface, for example for the control of a prosthesis. Professor Zheng coined the term in 2006 and has since been awarded a U.S. patent. “In addition to its application, this breakthrough has also triggered the need for the development of new processing algorithms for muscle ultrasound images, and new ultrasound probes and systems, leading to the development of a new field. I believe that sonomyography is changing the field of muscle functional assessment,” says Professor Zheng.

In addition to Professor Zheng’s team, PolyU has others colleagues working on different aspects of biomedical ultrasound across a number of different departments.

Cancer Drugs

“Research in cancer therapy shows signs of expansion in Hong Kong... and at PolyU,” say Professor Thomas Yun-Chung Leung and Associate Professor Thomas Wai-Hung Lo, both from the Department of Applied Biology and Chemical Technology and Lo Ka Chung Centre for Natural Anti-Cancer Drug Development. PolyU is researching anti-cancer therapies, either protein drugs or natural products, together with Professor Larry Chow, associate head of the Department of Applied Biology and Chemical Technology. “We are using compounds derived from herbs, traditional Chinese medicines, and enzymes from humans or even bacteria. Most anti-cancer drugs are very toxic with a lot of side effects; we hope these compounds will be safer as well as more effective,” explains Professor Leung.

Professor Leung and Dr. Lo developed pegylated recombinant human arginase (named BCT-100) in collaboration with Dr. Paul Ning-Man Cheng of Bio-Cancer Treatment International, Ltd. (BCT, a local biotech startup company, see p. 1643). The research was based on work suggesting that arginine depletion can starve tumor cells to death whilst leaving healthy cells relatively unscathed.

“We saw the potential of developing a cancer treatment that is free of many of the deleterious side effects commonly associated with cancer chemotherapy,” explain Professor Leung and Dr. Lo. “The main constituent of this new drug is human arginase, an enzyme that degrades arginine. Modification of arginase by adding polyethylene glycol has been found to greatly prolong the enzyme’s activity in the patient’s blood.

“From the bench to the bedside: translational research is what we are doing here,” -Professor Thomas Yun-Chung Leung

Following highly optimistic preclinical results, BCT has put the new drug in phase 1 clinical trials in Hong Kong for liver cancer, with phase 2 currently ongoing. Recently, BCT-100 became Hong Kong’s first ever drug to receive investigational new drug (IND) approval from the U.S. Food and Drug Administration (FDA) and thus clearing the way for clinical trials in the United States. This achievement is an important milestone in the development of the biotechnology and pharmaceutical industry in Hong Kong. Since then Professor Leung and Dr. Lo have developed a second generation anti-cancer drug molecule named BCA-PEG20, which has also shown promising results in preclinical tests.

“We believe that we have actually found a universal way of treating cancer. It’s not only effective against liver cancer, but against many other types we have tested as well,” says Professor Leung. “Cancer drug development is a global challenge,” he adds, “and it takes on average around 14 years to get a drug to market. We believe that knowledge transfer is important for drug development—from the bench to the bedside: translational research is what we are doing here.”
Established in 1956, Hong Kong Baptist University (HKBU) has over half a century of experience educating Hong Kong’s top students and is today ranked 111th worldwide by the 2010 Times Higher Education World University Rankings. Research is a top priority at HKBU: a University Grants Committee (UGC) Research Assessment Exercise, released in 2006, showed that three out of every four full-time HKBU academics were actively engaged in research. Particularly noteworthy is the School of Chinese Medicine (SCM), the first UGC-funded institution to provide full-time higher education in Chinese medicine in Hong Kong, and in which all staff members are involved in academic research. The school, founded in 1998 with a strong focus on education, has a clinical division and a total of 400 students (about 20 percent of whom are from mainland China).

HKBU’s small size is an advantage says Professor Chris Kong-Chu Wong, head of the Department for Biology. “Less is more,” he explains. “Our university is small, so teacher-student interaction is closer compared to other bigger universities. All final year students are actively involved in research, which is very different from other local universities. Different disciplines in the university also join together to share resources, another significant advantage.”

Collaborations do not stop there. Hong Kong sits in a unique position, with roots in both the Chinese and Western worlds. This makes it the perfect place to blend Chinese and Western medicinal practice and research. Crucial for HKBU’s prestigious SCM are collaborations with other top universities across the world. Of particular importance is HKBU’s close work with mainland China. “There is more space in China and better connections for the industry; manpower is cheaper and we can obtain grant money there,” says Raymond Wai-Yeung Wong, HKBU’s chair professor and associate head of the Department of Chemistry.

In February 2012, HKBU officially opened the Shenzhen Research Centre at the Shenzhen Virtual University Park in southern China with the aim of modernizing traditional Chinese medicine (TCM) and promoting research on materials science. Multidisciplinary research is at the new center’s core, with researchers working together who hail from chemistry, biology, physics, and Chinese medicine backgrounds.

In March 2010, the Hong Kong Chinese Medicine Authentication Centre (HKCMAC) was opened, accompanied by the set up of A-Mark Quality Chinese Medicines Authentication Scheme—a mechanism to ensure the safety and quality of Chinese medicine products through a series of stringent laboratory tests. Its aim, backed by the Hong Kong government, is to promote Chinese medicine products in the international market and boost consumer confidence in this age-old tradition under rigorous new testing. Overall HKBU’s SCM, the largest in Hong Kong, is proving to be an invaluable research center and resource for biotech in Hong Kong.

The School of Chinese Medicine (SCM)

Professor Ai-Ping Lu
Dean of Chinese Medicine, SCM; Director of Institute for Advancing Translational Medicine in Bone & Joint Diseases

“There is more space in China and better connections for the industry; manpower is cheaper and we can obtain grant money there.”

-Professor Raymond Wai-Yeung Wong

“...The SCM tries to bring Chinese medicine into the international arena in medical science,” says Professor Lu (M.D., Ph.D.) who supervises both the SCM at HKBU and the Institute for Advancing Translational Medicine in Bone & Joint Diseases. “We are trying to build up the standards and protocols for Chinese medicine, including quality control and safety. We try to integrate medicines to produce a combination of Chinese and Western medicine,” adds Professor Lu, who is a leader in international translational medicine and received his Master’s and Ph.D. degrees from the China Academy of Traditional Chinese Medicine (now known as the China Academy of Chinese Medical Sciences).

As a former director of the Chinese Academy of Social Sciences, Professor Lu believes that there “should be cooperation between Hong Kong and mainland China.” This is particularly crucial in traditional Chinese medicine. China not only provides funding and resources but plentiful patients for clinical trials in TCM. Professor Lu has worked with Peking University and the Kunshan government to establish the Academician Chen Xinzi Translational Medicine in Bone & Joint Diseases Studio in the Kunshan Small Nucleic Acid Biotechnology Research Institute, which will promote RNAi-based translational medicine research in bone and joint diseases, funded by one million RMB per year (US$160,182). In particular, the studio will develop a state-of-the-art platform to modify herbal products using small nucleic acid biotechnology to produce smart therapeutic molecules.

Professor Lu has also completed clinical trials for classical anti-arthritis drugs combined with natural herbal products designed to combat
rheumatoid arthritis. Trials conducted in mainland China have provided evidence-based methods to establish an ideal therapeutic strategy with a traditional Chinese style for sub-typed rheumatoid arthritis. Lu has been invited by Guanghua Hospital in Shanghai to establish the Institute of Arthritis to collect human samples from rheumatic patients, forming the largest biobank of rheumatoid arthritis in the world. “I am looking for further close cooperation [with China] in the construction of a translational medicine hospital in the next five or 10 years,” he says.

Professor Zhao-Xiang Bian  
Associate Dean and Professor of the Clinical Division, SCM

Professor Bian’s research focuses on three areas: the standardisation of Chinese medicine, new drug development based on TCM theory, and integrating Chinese medicine and Western medicine. Key for Professor Bian is his work helping to establish CONSORT (Consolidated Standards Of Reporting Trials) for TCM, which promotes the development of reporting standards and of design quality for randomized controlled trials utilizing TCM.

TCM drug development is an exciting frontier. Using a strategy of integrating clinical testing with systems biology approaches, research teams are currently screening active compounds or active fractions from Chinese medicinal plants in specific target areas involving inflammation, cancer, viral disease, and diabetes to determine if small molecule drugs can be developed. “A fast track for new drug development can be created encompassing classical formulations and modern drug development paradigms,” says Professor Bian. His team argued in a 2011 review published in Acta Pharmaceutica Sinica that the annals of Chinese medicine, which has treated patients for thousands of years, can be used as a rich resource for discovering new drugs. Beyond this, they offer centuries of patient data that are not yet being utilized and can help to bring safe, effective new drugs to the market in a cheap and rapid fashion.

We try to integrate medicines to produce a combination of Chinese and Western medicine.

- Professor Ai-Ping Lu

Integrative medicine is a new trend of our era. “Mounting evidence supports the idea that integrating classical wisdom from TCM with Western medicine can improve the effectiveness and/or safety of current treatments for certain diseases, such as cancer and metabolic diseases. The case for the merits of classical wisdom continues to strengthen,” says Professor Bian. One example is the Hemp Seed Pill (a classical Chinese herbal medicine) for functional constipation. A paper published last year in the American Journal of Gastroenterology by Professor Bian’s team concludes that this treatment is both safe and effective for alleviating excessive constipation. “Hong Kong is a very good place for integrative medicine development,” Professor Bian concludes. “International teams can develop Chinese medicine here to help create new medicines.”

Worldwide, more and more people are interested in Chinese medicine. The use of herbal medicine is becoming more popular.

- Professor Zhong-Zhen Zhao

Professor Zhong-Zhen Zhao  
Associate Dean and Professor of the Teaching Division

Professor Zhao is an internationally renowned scholar of Chinese medicine. For 30 years, Professor Zhao has focused his research on pharmacognosy and the authentication of Chinese medicine. In 2010, his “Encyclopedia of Medicinal Plants” was awarded a national prize of outstanding publishing, the highest government award in the news and publication field.

“Worldwide, more and more people are interested in Chinese medicine. The use of herbal medicine is becoming more popular,” explains Professor Zhao. “At the same time, however, the quality of the herbs is also raising international concern. How we ensure the safety of medications is very important.” In view of this, HKBU has established a standard authentication procedure which has been recognised by the international community.

Key is the creation of a database of herbal medicines (including a specimen center of authenticated herbal medicine and a museum of Chinese medicine) and a quality control platform for herbal medicines which have both been founded at the SCM in HKBU. Routine and innovative morphological authentication techniques have been used to authenticate herbal medicines.

“Hong Kong is a bridge to mainland China and to the rest of the world,” says Professor Zhao. “It is also the window to show Chinese medicine to international society.”
The Faculty of Science

Professor Ricky Ngok-Shun Wong
Acting Associate Vice-President and
Associate Dean of the Faculty of Science
bioh.khbu.edu.hk/?page_id=802

Originally a biochemist, Professor Wong believes that “interdisciplinary research is very important right now.” Professor Wong received his Ph.D. from the University of Oklahoma Health Sciences Center in Oklahoma City, U.S. and has experience in the biotechnology industry. He is responsible for setting up the biotechnology concentration of the applied biology program at HKBU.

In 1998, Professor Wong started his current research on the molecular pharmacology of ginseng, particularly the pharmacologically active ingredients, ginsenosides, and their effect on microRNA expression and biogenesis leading to angiogenesis.

“We discovered that the two types of ginsenosides: protopanaxatriols (PPTs) and protopanaxadiols (PPDs), possess opposing effects on angiogenesis,” he explains, proving that ginseng is an adaptogen. Since this discovery, Professor Wong has addressed different ginseng-mediated activities in various models including angiogenesis, tumors, wound healing, anti-aging, adipogenesis, diabetes, and influenza.

A paper co-authored by Professor Wong in Chinese Medicine, entitled “Pharmacogenomics and the Yin/Yang actions of ginseng: anti-tumor, angiomodulating and steroid-like activities of ginsenosides” is today still the most accessed article for the journal with over 30,000 downloads since online publication in 2007.

Professor Chris Kong-Chu Wong
Director, Croucher Institute for Environmental Sciences
Head, Department of Biology
bioh.khbu.edu.hk/?page_id=426

Professor Chris Kong-Chu Wong specializes in environmental research. His current research interests include osmosensing mechanisms and osmoregulatory functions of fish gill cells, functional characterization of human glycoprotein hormones STC1 and STC2 in carcinogenesis, and environmental contamination and mechanistic actions of emerging chemical pollutants.

“We do environmental diagnostics,” says Professor Wong, who has been working in the areas of endocrinology and toxicology for over a decade. He now focuses on how pollutants affect human growth and health.

“Ten years ago, we collected different kinds of environmental samples for the measurement of different environmental pollutants. We are now moving to the measurement of pollutants in human body fluids such as blood and urine samples.” With respect to human disease, Wong’s laboratory is focused on human infertility, metabolic disorders, and the correlation between blood levels of pollutants and the occurrence of systemic lupus erythematosus, an autoimmune disease. This shift to researching the effects of environmental pollution is new to Hong Kong. China posess its own pollution problems: high levels of mercury are found in both the effluent from coal-burning power plants and in cheap creams used to whiten the skin. “Following patients from exposure to disease development has a very long time lag,” says Professor Wong. “We look for hidden susceptibilities that may be triggered, leading to metabolic disease.” Professor Wong’s research is aimed at understanding and combating the development of these disorders.

Phyllanthus urinaria

Trained as a chemist, Professor Wai-Yeung Wong previously worked in traditional synthetic chemistry. Today, Professor Wong looks into basic scientific research and applications of new molecular functional materials with photofunctional and bio-imaging capabilities. He has a keen interest in investigating the potential applications of novel organic and metal-organic compounds in treating both solid and non-solid tumors as well as hematological diseases such as platelet disorders and thalassaemia. He is also interested in drug discovery and drug delivery, especially bifunctional molecules able to both target a malignant cell and kill it. Of importance are his collaborations with the Research Development Division from the School of Chinese Medicine at HKBU to make use of Phyllanthus urinaria extract as an antidote for hepatotoxicity after overdose administration of Panadol (acetamino-phen). The collaborative team has shown that P. urinaria extract works well in animal models and is now working with a Hong Kong biotech-
University of Hong Kong

www.hku.hk

The University of Hong Kong (HKU), located on Hong Kong island, was established in 1911 and is the city’s oldest university. HKU sits at the top of the Hong Kong league tables, ranked 23rd globally according to the Quacquarelli Symonds World University Rankings 2012. HKU has the most Academicians of the Chinese Academy of Sciences of any local institution, and many of its scholars are amongst the top one percent in their field according to ISI’s Essential Science Indicators.

Importantly for biotech, HKU’s Clinical Trials Centre at the Li Ka Shing Faculty of Medicine was established in 1998 with the mission of enhancing global health care by attracting and facilitating clinical research on new drugs, medical devices, and other medical products, methods, and procedures, whilst ensuring compliance in terms of subject protection, scientific validity, and data integrity. HKU’s Centre for Genomic Sciences, also part of the Li Ka Shing Faculty of Medicine, offers genomics, proteomics, and bioinformatics services. The center was established to facilitate the translation of knowledge into applications and is at the forefront of genomics research.

HKU’s Technology Transfer Office helps those with inventions and patent applications to find funding and turn discoveries into business opportunities through licensing and commercialization.

Chinese University of Hong Kong

www.cuhk.edu.hk

The Chinese University of Hong Kong (CUHK) is located in the New Territories near the Hong Kong Science Park. Founded in 1963, CUHK is ranked 15th in Asia according to the Times Higher Education World University Rankings 2011–2012. It is renowned for its research in the sciences and has a top medical school, clinical trial center, Knowledge Transfer Office, and the affiliated Hong Kong Institute of Biotechnology offering downstream support to the industry. The University houses four state key laboratories in collaboration with the Ministry of Science and Technology of China that produce research of national importance.

Professor Hsiang-Fu Kung, research professor of Virology at the Stanley Ho Center for Emerging Infectious Diseases and the School of Biomedical Sciences at CUHK, specializes in molecular genetics, molecular oncology, and virology. He looks at diseases such as human immunodeficiency virus, hepatitis B virus, and seasonal flu, and his diverse research interests include bacterial genetics and metabolism, enzymology, gene regulation, cytokines, and oncogenes. Infectious diseases are “always a major health problem in Hong Kong because of our special geographic location, the society, and the weather,” explains Professor Kung.

For Professor Kung, CUHK’s proximity to mainland China is a huge advantage, as it has a multitude of patients with infectious diseases, says Professor Kung, a member of the Chinese Academy of Sciences and an honorary professor at Peking Union Medical College. “My laboratory has enjoyed excellent collaborations with scientists in mainland China. We have established a wonderful friendship and collaborated very successfully on many international projects,” he adds.

Hong Kong University of Science and Technology

www.ust.hk

The Hong Kong University of Science and Technology (HKUST) was founded in 1991 and is currently ranked 62nd worldwide and 7th in Asia (Times Higher Education World University Rankings 2011–2012). HKUST’s focus on Biological Sciences and Biotechnology, considered one of five high-impact areas, is exemplified by the marine science research of Professor Pei-Yuan Qian, founding director of the university’s state-of-the-art marine laboratory.

Professor Qian, who is in the Division of Life Sciences, researches marine invertebrates. His research centers on the isolation and identification of non-toxic antifouling compounds and drug leads from marine organisms, the interaction between settling larvae and biofilm dynamics, larval ‘omics, and microbial metagenomics.

“We are pioneers in several areas of larval biology research, such as larval ‘omics,” explains Professor Qian. “We are one of the world’s leading labs in both the larval biology and biofouling/antifouling research, and the Environmental Science Program at HKUST is currently ranked 32nd in the world. Hong Kong itself has become a center of larval biology research.”

Professor Qian directs a collaborative research project under the Global Collaborative Research Program of King Abdullah University of Science and Technology (KAUST) to study microbial metagenomics and bioactive compounds from the Red Sea. “We have many collaborations in mainland China,” says Professor Qian. “If we were located in North America or Europe this wouldn’t be possible. In Hong Kong we also enjoy academic freedom and an independent faculty.”

Hsiang-Fu Kung

Professor Pei-Yuan Qian (left) showing guests around his marine laboratory
Biotech Successes in Hong Kong

The biotech industry in Hong Kong has leveraged the city’s unique advantages: proximity to the Chinese mainland providing opportunities for research and development and a vast potential market, plus a supportive business environment that attracts international talent and has a respected IP and common law system. Additionally, the Hong Kong Science Park (HKSP) provides a platform for both startup and established biotech firms to develop R&D and commercialization of products (see p. 1642). Below is a selection of successful local companies.

Angenomics, Ltd. is a leader in veterinary diagnosis, providing services and detection kits for veterinary pathogens including Avian Influenza H5 and H7, Foot-and-Mouth Disease, Classical Swine Fever, and Newcastle Disease, among others. The Avian Influenza diagnostic kits were the first imported RNA-based diagnostic kit to be registered with the Japan Ministry of Agriculture, Forestry and Fisheries. www.angenomics.com

BioRx, Ltd. is a biotechnology startup company and a member of HKSP’s Incu-Bio program located on site at the park. It develops “high-quality, low-cost biological products (cytokines, antibodies, vaccines) for cancer/immunology research use in pharmaceutical industry R&D departments, university and research institute laboratories, and hospitals,” explains BioRx’s founder Professor Xie Yung.

The Food Safety Laboratories, Ltd. (TFSL) is a pioneer in molecular food testing, with laboratories in both Hong Kong and Beijing. TFSL also offers molecular test kits for GMO testing, authentication, and pathogen detection across three amplification assay platforms. www.foodsafetylabs.com

New-A Innovation aims to advance healthcare by providing life-saving oxygen therapeutic products. One of its products used for treating canine anemia and hemorrhagic shock, OxaPex™, has received ACVM registration in New Zealand as a veterinary medicine. Currently, the applications for marketing authorization to European Medicines Agency and U.S. Food and Drug Administration are under way. New-A Innovation owns a certified GMP manufacturing facility in Hong Kong and facilities in New Zealand and China. www.newainnovation.com

Hai Kang Life Corporation, Ltd.
Founded in 1999, Hai Kang Life Corporation, Ltd. (HKLife) is a pioneering molecular diagnostics company. Situated in HKSP, HKLife develops biotech applications and systems with the mission to revolutionize the practice of clinical diagnostics, providing effective platforms for point-of-care applications focused on personalized medicine and pre-emptive surveillance of emerging pathogens and diseases.

HKLife develops new products utilizing DNA-based technologies including the novel EFADchip® (Electric Field Assisted Diagnostic) technology. The system incorporates patented electric-field technology which will allow for the detection of multiple pathogens in a simple and cost-effective manner. The system’s simplicity and user-friendliness allows for effective diagnosis in rural areas, with the initial product releases intended for blood screening, fever-causing pathogens, and respiratory disease diagnosis. In the future, this technology could assume a significant role in personalized medicine, disease surveillance, prognosis, theranostics, and even cancer detection. The EFADchip® is poised to deliver to the world innovative and cutting edge clinical solutions for the future. www.haikanglife.com

CK Life Sciences Int’l (Holdings), Inc., a member of the Cheung Kong Group, is listed on the Hong Kong Stock Exchange. Pursuing the mission of improving quality of life, CK Life Sciences is engaged in the business of research, development, commercialization, marketing, and sale of health and agriculture-related products in the areas of human health and environmental sustainability. A number of the company’s inventions have been granted patents in the United States. www_ck-lifesciences.com

PolyGum Technologies, Ltd., an incubatee in HKSP, is focusing on material science R&D. “Our first government-funded product utilizes a proprietary and patented formulation approach to improve the compliance and versatility of the topical drug delivery system,” said Dr. Bernard Pak-Li Chan. “We strive to make existing materials smarter so as to improve people’s health and quality of life.” www.polygum-technologies.net

DNA-TECH, Ltd. aims to integrate DNA-based products and services into daily life. Established in 2000, DNA-TECH provides testing kits and fingerprinting services which include prenatal testing, parentage testing, identification of relatives, forensics, and DNA profiling. www.dnatech.com.hk

The Santai Eco Fishery, Ltd. fish farming system and technologies are based on All Weather Eco Fishery Technology (AEFS), a commercially proven technology. The state-of-the-art system utilizes a specially designed “treatment stack” that assures the most complete water treatment. All water on the farms is recycled, lowering energy consumption, while guaranteeing removal of harmful chemicals, antibiotics, pesticides, and herbicides. www.santaieco.com/en/
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Science Careers
From the journal Science

“Chang Jiang Scholars” and other faculty positions available in Nankai University

Nankai University locates in Tianjin City, the third largest city in China and 30 min away from Beijing by a high-speed train. Nankai University is one of the key national universities directly under the jurisdiction of the Ministry of Education of China, and also a “211 Project” and “985 Project” university in China. Nankai University is the center for both education and academic research, and has materialized its excellent achievements, with the quality and the quantity of the research papers, projects, funds, and prizes are among the forefront of the national universities of China. Premier Enlai Zhou, the world-wide known mathematician Shing-shen Chern, physicist Ta-you Wu and playwright Yu Cao are alumni of Nankai University. Nankai University is recruiting for outstanding investigators to occupy the following honorable positions. These positions will not be closed for next several years.

1. Permanent and visiting professors of “Chang Jiang Scholars Program”: In addition to the requirements defined by the program (please see: http://www.changjiang.edu.cn/), the successful applicant with good healthy conditions should be an internationally known investigator with well-known achievement in the field, a strong leadership in guiding a first-class research team and a high capability in management and organization.

2. Professors and Associate Professors of “The National Thousand (Young) Talents Program”, “The State (Young) Special Support Plan”, and other high-level talent programs: In addition to the requirement defined by the program, such as “The National Thousand Talent Program” (http://www.1000plan.org/), the applicant with good healthy conditions should be a well-established and highly innovative scientist with strong academic records and leadership. The applicant for a young program should be able to demonstrate the potency to be an outstanding scientist in the future with the support from Nankai University.

Salary, start-up package and benefits: According to the policy recently issued by Nankai University, such as the “The Program Supporting Hundred High-level Talents”. “The Plan Cultivating Hundred Young Academic Leaders”, the recruited faculty at different academic levels will be supported with competitive salary, the start-up package (competitive start-up funds, newly renovated office/lab and experienced assistants), housing allowance, medical insurance and other possible benefits. All of the above offers are negotiable.

Contact us: The interesting candidates should send curriculum vitae in both of English and Chinese, the first page of 5 publications, statement of research interests/plans and at least three references to: Mr. Feng Li or Mr. Yuechao Wang, The Department of Human Resources, NanKai University, 94 Weijin Road, Tianjin, China, 300071; Tel: 0086-22-2350-8595; Fax: 0086-22-2350-1586; Email: nkuhruniversity@nankai.edu.cn

You will be contacted once we receive and finish the evaluation of your application for the position.

Nankai University is an Equal Opportunity Employer.

TENURE TRACK FACULTY POSITION IN CANCER RESEARCH

Case Western Reserve University School of Medicine
Case Comprehensive Cancer Center

The Case Comprehensive Cancer Center (http://cancer.cwru.edu/), a National Cancer Institute-designated Comprehensive Cancer Center at CWRU, with affiliates at University Hospitals Case Medical Center and Cleveland Clinic, invites applications for tenure track faculty positions at the level of Assistant and Associate Professor in cancer biology. Candidates should have a doctorate and post-doctoral research experience. Candidates at the Assistant Professor level should have a record of scholarly activity and external funding and have the potential to advance in cancer research. Candidates at the Associate Professor level should have a nationally-funded program and an outstanding record of cancer research achievements. Target areas of interest should be aligned with one of the Cancer Center’s scientific programs, including regulation of cell proliferation and apoptosis, signal transduction, cell cycle regulation, DNA damage and repair, chromatin and epigenetics, cancer genetics, cancer stem cells, breast cancer, ovarian cancer, or colon cancer. Individuals with expertise in high throughput genomic methods are particularly encouraged to apply. Priorities include innovative discovery research coupled with an interest in translational clinical disease-oriented cancer research.

The successful candidate will have a primary appointment in the Cancer Center or a basic science department at the medical school such as Biochemistry (http://www.case.edu/med/biochemistry/), Molecular Biology & Microbiology (http://www.case.edu/med/microbio/), or Pharmacology (http://pharmacology.case.edu/).

Please send curriculum vitae, a list of three or more references, and a cover letter outlining your research interests electronically to: cancersearch@case.edu. Please include “Cancer Research Faculty Search” in the subject line.

In employment, as in education, Case Western Reserve University is committed to Equal Opportunity and Diversity. Women, veterans, members of underrepresented minority groups, and individuals with disabilities are encouraged to apply.

Case Western Reserve University provides reasonable accommodations to applicants with disabilities. Applicants requiring a reasonable accommodation for any part of the application and hiring process should contact the Office of Inclusion, Diversity and Equal Opportunity at 216-368-8877 to request a reasonable accommodation. Determinations as to granting reasonable accommodations for any applicant will be made on a case-by-case basis.
Everyday, the people at Life Technologies work together to create breakthrough products that dramatically improve the lives of others.

Convicted in 1988 of a crime he did not commit, Herman Atkins spent more than 11 years in prison before the analysis of DNA evidence proved his innocence. The DNA analysis that set Herman free was made possible by the people at Life Technologies.

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Join in to stand out. Go to lifetechnologies.com/careers
DEPARTMENT CHAIR

The Loyola University Chicago Stritch School of Medicine has started a national search for the next Chair of the Department of Molecular Pharmacology and Therapeutics. The department engages in multidisciplinary research in neuro-, cancer, and cardiovascular pharmacology, with particular strengths in cellular signal transduction. The Department offers graduate training in programs leading to Ph.D., M.D./Ph.D., M.S., and M.S./M.B.A. degrees with a pharmacology emphasis. The department seeks an individual with strong leadership skills and the vision to develop and maintain robust, collaborative basic and translational research programs, and continue the strong commitment to graduate and medical education. The successful applicant will have a Ph.D. and/or M.D., a strong record of academic achievement, a significant level of past and current extramural research funding, extensive experience in graduate and medical student education and/or success in drug discovery and translational research in the pharmaceutical industry.

Interested applicants should submit a cover letter, a description of their leadership vision, curriculum vitae and the names of five references by e-mail to Michael Nishimura, Ph.D., Chair of the Search Committee (Pharmacology-Search@luc.edu). Review of applications will begin January 1, 2013 and all applications and nominations will be considered until the position is filled or until an adequate applicant pool is established.

The Loyola University Chicago Stritch School of Medicine is a Catholic Jesuit institution dedicated to excellence in education, research, service and health care and is an Affirmative Action, Equal Opportunity Employer, and encourages applications from women, minorities, and others who can contribute to the University’s research, teaching, and service missions.

Additional information about the Department and the Chair search can be found at: http://www.stritch.luc.edu/depts/pharmacology/index.cfm

Max Planck Institute for the Physics of Complex Systems
Center for Systems Biology at Dresden
Max Planck Institute of Molecular Cell Biology and Genetics

The Center for Systems Biology at Dresden (CSBD) in Germany announces the opening of positions in the

ELBE Postdoctoral Program

We seek strong candidates, with backgrounds in Cell or Developmental Biology, Computational Biology, Theoretical Physics, Biophysics, Bioinformatics, or Computer Science with a strong interest into working in a cross-disciplinary environment.

The Center provides a vibrant and collaborative research environment with a strong commitment to the interdisciplinary training and career development of postdoctoral fellows. Successful candidates will benefit from close collaborations with scientists from the Max Planck Institute of Molecular Cell Biology and Genetics (MPI-CBG), the Max Planck Institute of the Physics of Complex Systems (MPI-PKS) and the Technical University Dresden.

ELBE Postdocs are awarded on a competitive basis through the postdoctoral program of the Center. To foster collaborations, fellows will usually be affiliated with two Principal Investigators working in different disciplines. For details about the application procedure, please visit our website http://www.mpg-sysbio.de/jobs.html.

We are looking for individuals with experience in systems biology, bioinformatics or computer science with a history of strong scientific achievements. We are particularly interested in applying systems biology approaches to address fundamental biological questions which may include, but are not limited to developmental control, stem cell biology, circadian rhythms, or protein phosphorylation.

To apply, please visit our website at http://www.mpg-sysbio.de/jobs.html. Questions should be addressed to Michael Nishimura, Chair of the Search Committee, michael.nishimura@luc.edu. Applications should be submitted by January 28, 2013. Applications are to be sent online at http://academicjobs.oakland.edu/postings/575 and should include a cover letter, curriculum vitae, detailed statement of research plans, a statement of teaching interests, three representative publications, and a list of three or more references.

Questa should be addressed to Doug Wendell, Genetics Search Chair, Department of Biological Sciences (wendell@oakland.edu).

Oakland University is an Affirmative Action/Equal Opportunity Employer and encourages applications from women and minorities.

WSU is an EO/AA Educator Employer.

http://academicjobs.oakland.edu/postings/575

http://www2.oakland.edu
Meetings
Meeting dates / abstracts due
From Base Pair to Body Plan – Celebrating 60 Years of DNA
Single Cell Analyses
March 6 - March 9 / January 4
Systems Biology: Networks
March 13 - March 16 / January 11
Computational Cell Biology: The Interplay between Models & Experimentation
March 19 - March 22 / January 11
RNA & Oligonucleotide Therapeutics
April 10 - April 13 / January 25
Synapses: From Molecules to Circuits & Behavior
April 16 - April 20 / February 1
Cancer Biology & Therapeutics
April 23 - April 27 / February 8
Telomeres & Telomerase
April 30 - May 4 / February 15
The Biology of Genomes
May 7 - May 11 / February 22
The Ubiquitin Family
May 14 - May 18 / March 1
Retroviruses
May 20 - May 25 / March 8
78th Symposium: Immunity & Tolerance
May 29 - June 3 / March 15
Wiring the Brain
July 18 - July 22 / May 3
Metabolic Signaling & Disease: From Cell to Organism
August 13 - August 17 / May 31
Eukaryotic mRNA Processing
August 20 - August 24 / June 7
Mechanisms of Eukaryotic Transcription
August 27 - August 31 / June 14
Behavior & Neurogenetics of Nonhuman Primates
September 6 - September 9 / June 21
Eukaryotic DNA Replication & Genome Maintenance
September 9 - September 13 / June 28
Microbial Pathogenesis & Host Response
September 17 - September 21 / July 8
Stem Cell Biology
September 24 - September 28 / July 12
Neurobiology of Drosophila
October 1 - October 5 / July 19
Cell Death
October 8 - October 12 / July 26
Genome Informatics
October 30 - November 2 / August 16
Cell Biology of Yeasts
November 5 - November 9 / August 23
Precision Medicine: Personal Genomes & Pharmacogenomics
November 13 - November 16 / August 30
Harnessing Immunity to Prevent & Treat Disease
November 20 - November 23 / September 6
Plant Genomes & Biotechnology: From Genes to Networks
December 4 - December 7 / September 20
Rat Genomics & Models
December 11 - December 14 / September 27

Courses
Course dates / applications due
Workshop on Leadership in Bioscience
February 22 - February 25 / January 11
Protein Purification & Characterization
April 3 - April 16 / January 31
Quantitative Imaging: From Cells to Molecules
April 3 - April 16 / January 31
Cell & Developmental Biology of Xenopus
April 5 - April 16 / January 31
Workshop on Autism Spectrum Disorders
June 5 - June 11 / March 15
Single Cell Analysis
June 5 - June 18 / March 15
Advanced Bacterial Genetics
June 5 - June 25 / March 15
Ion Channels & Synaptic Transmission
June 5 - June 25 / March 15
Mouse Development, Stem Cells & Cancer
June 5 - June 25 / March 15
Vision: A Platform for Linking Circuits, Perception & Behavior
June 12 - June 25 / March 15
Statistical Methods for Functional Genomics
June 21 - July 3 / March 15
Workshop on Pancreatic Cancer
June 26 - July 2 / March 15
Drosophila Neurobiology: Genes, Circuits & Behavior
June 28 - July 16 / March 15
Frontiers & Techniques in Plant Science
June 28 - July 18 / March 15
Advanced Techniques in Molecular Neuroscience
July 2 - July 18 / March 15
Proteomics
July 9 - July 24 / March 15
Biology & Disorders of Learning & Memory
July 20 - August 2 / March 15
Computational Cell Biology
July 23 - August 12 / March 15
Eukaryotic Gene Expression
July 23 - August 12 / March 15
Yeast Genetics & Genomics
July 23 - August 12 / March 15
Imaging Structure & Function in the Nervous System
July 24 - August 13 / March 15
Synthetic Biology
July 30 - August 12 / March 15
Cellular Biology of Addiction
August 6 - August 12 / April 15
Programming for Biology
October 14 - October 29 / July 15
X-Ray Methods in Structural Biology
October 14 - October 29 / June 15
Computational & Comparative Genomics
November 6 - November 12 / July 15
Antibody Engineering & Phage Display
November 6 - November 19 / July 15
Advanced Sequencing Technologies & Applications
November 12 - November 24 / July 15
The Genome Access Course
April 21-23, July 18-20, November 17-19

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Phone: 516-367-8346
www.cshl.edu/meetings
meetings@cshl.edu
Applications are invited for a tenure-track position at the level of Assistant Professor in Pharmacology and Toxicology at the University of Kansas, School of Pharmacy. The Pharmacy School at the University of Kansas has a strong history of competitive research and ranks second nationally in total NIH funding. Candidates must hold a Ph.D., M.D., or equivalent degree and have at least three years of postdoctoral research experience. Candidates should demonstrate a strong potential to develop/maintain an externally funded research program in pharmacology or toxicology. Individuals with research expertise in drug metabolism and disposition, or translational aspects of neurodegeneration and regeneration related to Alzheimer’s disease, diabetes, or traumatic brain injury are especially sought. Prospective faculty are also expected to actively participate in teaching in the graduate and professional pharmacy programs of the department. To aid faculty research, core facilities exist for proteomics, DNA microarray analyses, molecular modeling, high-throughput screening, peptide synthesis, quantitative bio-behavioral assessments and confocal/electron microscopy. The University of Kansas is especially interested in hiring faculty members who can contribute to four key campus-wide strategic initiatives: (1) Sustaining the Planet, Powering the World: (2) Promoting Well-Being, Finding Cures; (3) Building Communities, Expanding Opportunities; and (4) Harnessing Information, Multiplying Knowledge. See http://www.provost.ku.edu/planning/themes/ for more information.

Under-represented minorities and women are encouraged to apply. To apply, please electronically submit your curriculum vitae, a three-page description of research plans and the three letters of recommendation to Dr. Rick Dobrowsky at dobrowsky@ku.edu. Otherwise, mail materials to Department Pharmacology and Toxicology, 1251 Wescoe Hall Dr., University of Kansas, Lawrence, KS 66045. Position will remain opened until filled.

The University of Kansas is an Equal Opportunity Employer.

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The University of Neuchâtel, Switzerland, invites applications for a position of

**Full Professor or Assistant Professor in Geothermics**

**Job description:** the successful candidate will establish a dynamic research program in fundamental and applied geothermics as part of a competence center for hydrogeology and geothermics. Experts in geological and geophysical exploration, characterization of aquifers and stimulated systems at intermediate/large depth, and hydrothermal/geochemical processes in such systems are particularly encouraged to apply. The successful candidate will foster synergies with local, national and international partners, contribute to teaching in the BSc and MSc curricula in English and in French after an adaptation period, and participate in administrative tasks.

**Starting date:** August 1st, 2013 or upon agreement.

**Requirements:** background in geology/Earth sciences with a PhD degree, as well as an internationally recognized research record in geothermics.

**Application file:** to be sent by regular mail to the Dean of the Faculty of Science, Prof. Peter Knopf, rue Emile Argand 11, 2000 Neuchâtel, Switzerland, as well as by email (one single pdf file) to dayen.sciences@unine.ch.

The application will include a signed letter of motivation, a curriculum vitae covering the applicant's teaching and research experience, a list of research funds obtained, a list of publications and copies of academic degrees. Applicants will also provide a brief teaching statement (max. 1 page), and a description of the research projects he/she would develop at the University of Neuchâtel (max. 2 pages). The candidate will request three experts to send a signed letter of reference via email directly to the head of the Hiring Committee, Prof. D. Hunkeler daniel.hunkeler@unine.ch.

**Application deadline:** March 1st, 2013.

The University of Neuchâtel encourages women to apply.

**Additional information:** Prof. D. Hunkeler daniel.hunkeler@unine.ch or Dean of the Faculty dayen.sciences@unine.ch and www.unine.ch/sciences

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The University of Pittsburgh Cancer Institute (UPCI) (www.upci.upmc.edu) at the University of Pittsburgh has a strong program in molecular and cellular cancer biology (www.upci.upmc.edu/mccbp) and seeks to recruit faculty to develop outstanding research programs that bring approaches complementing our existing strengths in three broad areas. These include: genome stability, hormones and signal transduction; and mitochondria and cancer metabolism. There are opportunities for extensive collaborations within the University of Pittsburgh Medical Center and Carnegie Mellon University, as well as opportunities for participation in related graduate programs.

Specifically, we seek candidates who have an interest in the interplay between aging and cancer. We welcome applications from individuals who use state-of-the-art tools working in an array of biological systems that can translate bench science to clinical cancer applications. Candidates with a track record of independent funding and publications in high impact journals will be given the highest consideration.

Successful candidates will be expected to run a vibrant collaborative program supported by external funding. A competitive salary and research start-up package will be provided. The University Of Pittsburgh School Of Medicine is consistently among the top ten in NIH-funded medical schools in the U.S. and is located in one of America's livable cities.

Positions will be coordinated with Departments in the University of Pittsburgh and are tenure track. To apply, please send your curriculum vitae, a one-page summary of your research plans, and three letters of recommendation to the search coordinator: Dana Kramer, UPCI Research Pavilion, Hillman Cancer Center Suite 2.6, 5117 Centre Avenue, Pittsburgh, PA 15213-1863, email: kramerdn@upmc.edu. Applications will be reviewed and evaluated upon receipt of full applications on an ongoing basis.

The University of Pittsburgh is an Affirmative Action, Equal Opportunity Employer.

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**American Philosophical Society Postdoctoral Fellowship in Biological Science**

Benjamin Franklin founded the American Philosophical Society (APS) in 1743 as the nation’s first learned society. For many years the APS served as the nation’s de facto science academy and patent office and is today the administrator of the nation’s oldest scientific prize (the Magellanic Premium, first awarded in 1790).

In conjunction with its longstanding tradition of supporting the research of early career scientists and scholars in all disciplines, the APS is pleased to announce a new fellowship program: the American Philosophical Society Postdoctoral Fellowship in Biological Science. Sponsored by the Ewing Marion Kauffman Foundation, the two-year postdoctoral fellowship, to be awarded by a committee made up of eminent members of the American Philosophical Society, will support innovative research projects in fields that change each year. This first competition will fund a project in molecular biology, biochemistry, and/or the life sciences.

**Eligibility:** Applicants must have received the Ph.D. from an institution in the United States and should be either entering or already affiliated with a U.S. institution at the postdoctoral level. Applications will be judged on their innovative nature. Applications for academic year 2013–2014, eligible for renewal in academic year 2014–2015, will be based on existing problems in biochemistry and molecular biology and can include areas where either of these disciplines contribute, such as computational, evolutionary, and systems biology; anthropology; and ecology.

**Award:** Stipends for the fellowship are $55,000 for the first year and $60,000 for the second year upon approval of a renewal request.

**Details and Application:** Complete information on the program, the requirements, and the application materials are available at the APS website (www.amphilsoc.org/grants/biologicalscience).

**Deadline and Notification:** The application and the letters of support must be received by March 1, 2013. The committee’s decision will be communicated by June 2013. Questions may be directed to APS Director of Grants and Fellowships Linda Musumeci, at L.Musumeci@amphilsoc.org or 215-440-3429.
IST Fellow
CALL FOR POSTDOCTORAL FELLOWS

IST Austria has set up a program for exceptional postdoctoral fellows with an emphasis on interdisciplinary work. Appointments will be for 2–4 years. Applications will be accepted at any time, but fellows will be selected twice a year in April and October, with deadlines on 15th of March and September, respectively. Applicants must have the support of one or more members of the IST Austria faculty.

Benefits:
- Internationally competitive salary
- Full social security coverage
- Travel, mobility and family allowance
- Funding for conferences and scientific visits

The institute offers postdoctoral positions in the following fields:
- Biology
- Computer Science
- Mathematics
- Physics
- Neuroscience

ISTFELLOW is partially funded by the European Union.

For a list of faculty members please visit www.ist.ac.at.
For inquiries, please contact istfellow@ist.ac.at.
For further information, please refer to the ISTFELLOW website: http://ist.ac.at/istfellow

IST Austria is committed to Equality and Diversity.
Tenure Track Faculty Positions
Department of Physiology
School of Medicine

The Department of Physiology in the School of Medicine at the University of Texas Health Science Center at San Antonio is inviting applications for two tenure-track faculty positions at the level of Assistant or Associate Professor. Prospective applicants holding a Ph.D. and/or M.D. with an outstanding record of innovative research and academic performance, and demonstrated expertise in any of the areas of systems, cellular and molecular neuroscience using cutting edge methodologies are encouraged to apply. As part of the Department’s mission of expanding neuroscience research, special consideration will be accorded to candidates pursuing research in areas of neuroscience that are not currently well represented at the Health Science Center. The successful candidates will receive generous start-up packages and newly renovated laboratory space. They will be expected to establish rigorous and externally funded independent research programs, provide exemplary mentorship, and engage in productive scientific collaborations. They will become members of an Interdisciplinary Graduate Program to recruit and train graduate students. The deadline for receiving applications is March 1, 2013. You are encouraged to visit our website at http://physiology.uthscsa.edu/new/ to learn about the department and the research of our current faculty. Please email a combined PDF file that includes curriculum vitae, a brief description of scientific achievements with current and future research interests (not to exceed 2 pages), and the names of three references to Physiology Search Committee [email address: physiologysearch@uthscsa.edu].

Manzoor Bhat, M.S., Ph.D.
Professor and Chairman
Zachary Foundation Distinguished Chair in Neurosciences
Department of Physiology
School of Medicine
University of Texas Health Science Center, San Antonio
7703 Floyd Curl Drive
San Antonio TX 78229

The University of Texas Health Science Center San Antonio is an Equal Employment Opportunity/Affirmative Action Employer. All faculty appointments are designated as security sensitive positions.

Tenure Track Faculty Position
Department of Physiology
School of Medicine

The Korea Institute of Science and Technology Europe is an international research institute located on campus of the University of Saarland and is active in science and engineering projects in the field of bio-medical analysis, a brief description of scientific achievements. To strengthen our team we are searching for a Research Group Leader for „Instrument Manufacturing and Clinical Diagnostics“ Depending on qualifications, this is combined with a Honorary Professorship at the University of Saarland in the department of Mechatronics.

The aim of the research work is to develop novel scientific measurement methods and instruments using nanotechnology, biotechnology or microfluidics. These methods and instruments should be of relevance to the fields of clinical diagnostics or chemical analysis. For the position, KIST Europe offers already established and soon to be expanded laboratories and staff. Among the tasks of the honorary professorship is the teaching of fundamentals and application of instrument manufacturing in clinical diagnostics in the curriculum of the faculty of physics and mechatronics.

We are expecting:
- PhD in engineering or natural science
- Teaching experience as well as excellent research achievements
- Ability to raise and conduct research grant projects and to cooperate with other research institutions
- Excellent language skills in written and spoken English
- High motivation and social skills / autonomy / capacity for teamwork / own initiative

Salary level is comparable to German university (W level). Please send your written application with all usual documents to the following address until 15 January 2013:

Prof. Dr. Andreas Manz
KIST Europe Forschungsgesellschaft mbH
Campus E 71, D - 66123 Saarbrücken,
Tel. +49 (0) 681-9382 210 / manz@kist-europe.de

Manzoor Bhat, M.S., Ph.D.
Professor and Chairman
Zachary Foundation Distinguished Chair in Neurosciences
Department of Physiology
School of Medicine
University of Texas Health Science Center, San Antonio
7703 Floyd Curl Drive
San Antonio TX 78229

The University of Texas Health Science Center San Antonio is an Equal Employment Opportunity/Affirmative Action Employer. All faculty appointments are designated as security sensitive positions.
ShanghaiTech University is a newly established research university located at Zhang-Jiang High-Tech Park in Pudong, Shanghai, China. Currently, it has four schools and several advanced research institutes: School of Physical Science and Technology, School of Life Science and Technology, School of Information Science and Technology and School of Entrepreneurship and Management with expected enrollment of 4,000 graduate and 2,000 undergraduate students. The new University is jointly supported by Chinese Academy of Sciences and Shanghai Municipal Government. The vision of ShanghaiTech is to be a globally recognized top research university for its size and profound integration of education, research and innovation by creating a dynamic people centered hub where innovative research, education, and community service meet to provide a multi-disciplinary approach to learning and to solving problems facing society. As a new university, we expect to set up new policies to support an academic environment for best practices of research, teaching and learning. The University will build state of art research and teaching facilities including large research instruments, modern library and classrooms. Our faculty will have the access to the research facilities and resources of Chinese Academy of Sciences. Shared governance will be a part of the campus culture.

We are currently seeking applicants for multiple tenure-track and tenured positions at all ranks.

**Initial Research Support Package:** University will provide internationally competitive start-up fund plus support of Research Associate and Post-Doctoral fellows. Laboratory space will be provided matching the research needs.

**Compensation and Benefits:** Salary is competitive and commensurate with experience and academic accomplishments. ShanghaiTech also offers a comprehensive benefit package including housing benefits.

1. School of Physical Science and Technology (SPST)
   SPST is established to encourage interdisciplinary research particularly focused on Materials, Environment and Energy. The School is expected to have about 100 regular tenured and tenure-track faculty, 1,200 graduate and 750 undergraduate students.

   **Qualifications:** Successful applicants should have a doctoral degree in Physical Science and Engineering as well as postdoctoral experience for junior level position. They will be expected to establish an independent, internationally recognized research program, to supervise students and to teach two courses a year. The senior position applicant is expected to be leading scientist in his/her research disciplinary. We particularly welcome those with research interests related to Energy, Materials and Environment Science and Engineering to apply.

2. School of Information Science and Technology (SIST)
   SIST seeks faculty candidates in all cutting edge areas of information science and technology, with special focus on: advanced futuristic computer architecture and technology, nano-scale electronics, ultra-high speed and low power circuits, intelligent multimedia and integrated signal processing systems, next-generation computer systems, computational foundations, big data, data mining, visualization, computer vision, bio-computing, smart energy devices and systems, highly-scalable and multi-service heterogeneous networking, as well as various inter-disciplinary areas involving the foundation and applications of information science and technology.

   **Qualifications:** Candidates must demonstrate: A strong interest in undergraduate and graduate education; Well-developed research plans and demonstrated strength; Ph.D. (Electrical Engineering, Computer Engineering, Computer Science, or closely related field); A minimum relevant research experience of 4 years.

3. School of Life Science and Technology (SLST)
   SLST seeks early career scientists in these five research areas: Protein science and biotechnology; Stem cell research and regenerative medicine; Systems biology and translational medicine; Physical biology and molecular imaging; Chemical biology and innovative pharmacology.

   **Qualifications:** The successful candidates should have an exceptional track record of research in life sciences or a closely related discipline within the last five years. Besides maintaining an active research program, the recruited candidates will also be expected to contribute to the educational missions of undergraduate and graduate programs within SLST.

4. School of Entrepreneurship and Management (SEM)
   SEM provides students with practical knowledge in strategic emerging industries where there is a high demand for commercialization of innovation that advances China’s economic development. SEM programs focus on the applied fields of technology innovation management, entrepreneurship and MSE management, as well as venture capital management. SEM offers advanced studies through MBA, EMBA, and EDP programs.

   **Qualifications:** An applicant should possess a doctoral degree in professional studies such as Economics, Finance, or Management. Industry experience is preferred but not necessary. Faculty responsibilities include teaching MBA or EMBA students and conducting applied research often working with companies. SEM especially welcomes applicants with interests related to Innovation, Entrepreneurship, and Venture Capital.

5. The iHuman Institute
   The iHuman Institute is established to encourage interdisciplinary research focused on human cell signaling combining chemistry, biology, imaging, and structural biology. Integration of academic basic sciences and applied sciences with industry will be integrated together providing all researchers with unique scientific opportunities.

   **Qualifications:** Successful applicants should have a doctoral degree in Physical or Life Sciences as well as postdoctoral experience for junior level position. Applicants will be expected to establish an independent, internationally recognized research program and supervise students. The senior position applicants are expected to be leading scientists in his/her research disciplinary. We particularly welcome those with research interests related to chemical biology and bioinformatics to apply.

6. Shanghai Institute for Advanced Immunochemical Studies (SIAIS)
   SIAIS focuses on elucidating the most fundamental problems in life science research, particularly in immunochemistry. We are seeking highly motivated and outstanding candidates with strong interests in antibody design and engineering, antibody assay method and platform technology, antibody therapeutics, structural biochemistry, and translational medical research.

   **Qualifications:** Qualified candidates should possess a doctoral degree in physical or life science with successful track records in academia and pharmaceutical industry. SIAIS particularly welcomes those with research interests that emphasize innovation and transformation.

**Application Procedure:** Submit a cover letter, a 2-3 page statement of research interests, a CV and the names and addresses of three individuals who can serve as references to the mail addresses given below:

School of Physical Science and Technology: SPST@shanghaitech.edu.cn
School of Information Science and Technology: SIST@shanghaitech.edu.cn
School of Life Science and Technology: SLST@shanghaitech.edu.cn
School of Entrepreneurship and Management: SEM@shanghaitech.edu.cn
The iHuman Institute: iHuman@shanghaitech.edu.cn
Shanghai Institute for Advanced Immunochemical Studies: SIAIS@shanghaitech.edu.cn

ShanghaiTech University, Building 2, 319 Yueyang Road, Shanghai 200031, China
Review of applications will start immediately and will continue until positions are filled.

For more information, please visit our website: www.shanghaitech.edu.cn
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**FACULTY POSITIONS**

**MEDICAL SCIENCES**

Washington State University Division of Health Sciences, located on the Riverpoint campus in Spokane, invites applications for two tenure-track faculty positions at the rank of Assistant or Associate Professor and one at the rank of Professor in its new Medical Sciences section. Applicants must have an earned doctorate degree in the basic, clinical, or translational medical sciences. Successful candidates will be expected to maintain an active, extramurally funded research program, to mentor graduate students and fellows, and to teach in the professional and/or graduate curricula. The successful candidate for the Professor position will additionally be expected to take a leadership role in rapidly expanding medical research in Spokane, including recruitment of faculty and programmatic development.

Areas of research interest are open, but preference will be given to candidates completing research in the areas of planned growth in our program including molecular, cellular, physiological and systems biology approaches to: neurosciences/behavioral neurosciences (sleep, additions, pain, anesthesia), senescence and immortality (stem cells, cancer, aging, regenerative medicine), microbiology (antimicrobial resistance, virology), and metabolic diseases (obesity, diabetes, renal and cardiovascular disease). Washington State University is substantially building its research and graduate education capacity in the medical sciences. The Medical Sciences section also participates in preclinical medical education in the WWAMI program, which is a collaborative medical education program with the University of Washington School of Medicine.

Screening of applications will begin immediately and will continue until a suitable candidate is identified. To apply visit: www.wsu.jobs. Applications must include a current curriculum vitae and letter of application describing professional goals, research, and teaching experience. Before interviews commence four letters of reference will be required. Contact Kim Nae, Administrative Manager, at knoe@wsu.edu or 509-358-7515 for questions, assistance with the application process or confidential expressions of interest.

Women and minorities are particularly encouraged to apply. Washington State University is an Equal Opportunity/Affirmative Action Educator and Employer.

**HUMAN FRONTIER SCIENCE PROGRAM**

**CALL FOR LETTERS OF INTENT FOR RESEARCH GRANTS: AWARD YEAR 2014**

HFSP supports international preferably intercontinental collaborations in basic life science research. Applications are invited for grants to support innovative and interdisciplinary approaches to understanding complex mechanisms of living organisms. Applicants are expected to develop novel lines of research distinct from their ongoing research. Preliminary results are not required.

Program Grants are for independent scientists at all stages of their careers while Young Investigators’ Grants are for teams of scientists who are all within 5 years of establishing an independent laboratory and within 10 years of obtaining their PhDs. Both provide 3 years support for 2 – 4 member teams, with not more than one member from any one country, unless critical for the innovative nature of the project. Awards are dependent upon team size and successful teams will receive up to $450,000 per year. The principal applicant must be located in one of the HFSP member countries but co-investigators may be located in any country.

For further information see the HFSP web site (www.hfsp.org). Teams must register via the web site by March 20th 2013 so as to submit a letter of intent online by the March 27th 2013 deadline.

Specific enquiries: grant@hfsp.org

**Academic Positions**

**Innovation Center of Chemistry for Energy Materials (i-ChEM)**

Xiamen University - Fudan University -
University of Science and Technology of China

**Faculty Appointments at Professor/Associate Professor Level and Postdoctoral Fellow**

The Innovation Center of Chemistry for Energy Materials (i-ChEM) is established jointly by the chemistry departments of Xiamen University, Fudan University, and University of Science and Technology of China under the 2011 Innovation Program of the Ministries of Education and Finance of China. The mission of the Center is to establish a chemistry-based world-class center for innovative research on novel and/or strategic energy materials (including, but not limited to, synthesis, storage and conversion) at the forefront of materials chemistry as well as chemistry. The Center cordially invites applications or nominations for the following positions: Chief Scientists, Principle Investigators, Research Associates, and Postdoctoral Fellows. A number of technical and administrative personnel positions are also available.

**Chief Scientist:** Seven Chief Scientists positions are available for the seven divisions of the Center: (1) optimal utilization of carbon resources; (2) chemical energy storage and conversion; (3) chemistry of solar energy conversion; (4) chemical synthesis and fabrication; (5) theoretical chemistry and simulation; (6) instrumentation and methodology; (7) X-research division. The Chief Scientists are expected to be world-renowned scientists in their respective fields.

** Principle Investigator:** To conduct cutting-edge research on respective research areas mentioned above (at the full professor level).

**Research Associate:** To undertake research under the leadership of a Principle Investigator (at full professor or associate professor level).

**Postdoctoral Fellow:** Highly motivated, young, and talented researcher who has received his/her Ph. D within the last five years.

The Center will offer successful candidates with highly competitive salaries, attractive research start-up funds, research space, and postdoctoral positions, as well as other supporting packages.

Application materials, including a cover letter; curriculum vitae; a list of names and contact details of three references; a summary of research interests and directions, should be forwarded to Professor Yun-Bao Jiang, Head of Human Resource office of the Center via e-mail: ‘2011-ichem@xmu.edu.cn’. For more information please visit the website of the Center: http://www.2011-ichem.org/.
There’s only one

Dr. Shirley Malcom

To Dr. Shirley Malcom, born and raised in the segregated South more than 65 years ago, a career based on her studies in science seemed even less likely than the launch of the Soviet’s Sputnik. But with Sputnik’s success, the Space Race officially started and, in an instant, brought a laser-like focus to science education and ways to deliver a proper response. Not long after, Dr. Malcom entered the picture.

Although black schools at the time received fewer dollars per student and did not have sufficient resources to maintain their labs at a level equivalent to the white schools, Dr. Malcom found her way to the University of Washington where she succeeded in obtaining a B.S. in spite of the difficulties of being an African American woman in the field of science. From there she went on to earn a Ph.D. in ecology from Penn State and held a faculty position at the University of North Carolina, Wilmington.

Dr. Malcom has served at the AAAS in multiple capacities, and is presently Head of the Directorate for Education and Human Resources Programs. Nominated by President Clinton to the National Science Board, she also held a position on his Committee of Advisors on Science and Technology. She is currently a member of the Caltech Board of Trustees, a Regent of Morgan State University, and co-chair of the Gender Advisory Board of the UN Commission on Science and Technology for Development. She has held numerous other positions of distinction and is the principal author of *The Double Bind: The Price of Being a Minority Woman in Science*.

Of her active career in science, Dr. Malcom says, “I guess I have become a poster child for taking one’s science background and using that in many other ways: we ask questions; we try to understand what we find; we consider what evidence we would need to confirm or refute hypotheses. And that happens in whatever setting one finds oneself.”

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Smithsonian Institution

Director
Tennenbaum Marine Observatories

The Smithsonian Institution seeks an innovative leader for the newly endowed Tennenbaum Marine Observatories (TMO). For more information on the TMO, please visit: http://newsdesk.si.edu/releases/smithsonian-launches-global-marine-biodiversity-project-10-million donati on.

The Smithsonian has launched the TMO, an initiative envisioned as a long-term, global-scale network of ecological observatories that will be dedicated to understanding changes in the structure and function of marine ecosystems. This network is committed to innovative measurements and experiments that will span traditional disciplinary boundaries and be executed in a standardized fashion over exceptional spatial and temporal scales. It is anticipated that this approach will lead to a new and fundamental understanding of our oceans that supports sustainable use.

The TMO will build upon the extraordinary strengths, capacity, and leadership of the Smithsonian Institution in marine sciences. With over 50 marine scientists, the Smithsonian expertise provides considerable depth that spans many disciplines in biology, ecology, evolutionary biology, paleobiology, anthropology, systematics, geochemistry, genetics, and other areas. The Smithsonian also has excellent infrastructure for marine science, including marine laboratories in Maryland, Florida, Belize, and Panama.

The founding director of the TMO will have the opportunity to lead a cutting-edge research program that will result in high profile, policy-relevant discoveries.

Characteristics that we seek in a director include:

- Record of experience and scholarly achievement in core areas of TMO research.
- Evidence of innovative approaches and ability to integrate ideas/concepts across traditional disciplinary boundaries.
- Clear record as an effective leader in developing and implementing a major research program and in working with diverse groups of people both inside and outside the institution.
- Demonstrated strong organization and management skills.
- Ability to serve as the spokesperson/ambassador to other Smithsonian programs, outside collaborators, donors, and the public.
- Successful track record of competitive grant funding.

The director will be based at the National Museum of Natural History (http://www.mnh.si.edu/) in Washington DC, with the opportunity to establish close affiliations with one or more other research units at the Smithsonian including the Smithsonian Environmental Research Center (http://www.serc.si.edu), the Smithsonian Tropical Research Institute (http://www.stri.si.edu), and the Smithsonian Conservation Biology Institute (http://nationalzoo.si.edu/scbi/default.cfm). The director will guide all aspects of the design, development, implementation, and growth of this new initiative, in consultation with TMO participants, and will manage all TMO activities both nationally and internationally.

The Smithsonian Institution is an Equal Opportunity Employer.

This is a full-time, permanent position located in Washington, DC with a pay range of $150,000 to $165,300.

This position will be open for applications starting December 20, 2012. Review of applications will start on January 21, 2013.

For further details and information on how to apply, consult http://www.sihr.si.edu/jobs.cfm and scroll to position number EX-13-08.

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University of New Hampshire

Four Tenure-Track Faculty Positions in Genome-Enabled Biology

The University of New Hampshire, College of Life Sciences and Agriculture seeks to hire four new, tenure-track Assistant Professors with demonstrated interests and expertise in diverse areas of biology enabled by modern genomic analyses. We are particularly interested in building on existing strengths in: 1) behavior; 2) host/pathogen interactions; 3) nutrition; and 4) genome maintenance and evolution. Candidates must have a Ph.D. and demonstrated potential to develop and lead strong and productive research programs. They will be expected to compete successfully in national funding initiatives and to achieve national and international prominence in their fields. Individual hires will be expected to integrate their areas of research strength with existing academic programs. Successful candidates will also be expected to train graduate students and to develop and teach fundamental courses at the undergraduate and graduate levels that will contribute to academic excellence.

Complete application information is available at colsa.unh.edu/employment. Review of applications will begin on February 15, 2013 and will continue until the positions are filled.

The University actively seeks excellence through diversity among its administrators, faculty, staff and students and prohibits discrimination on the basis of race, color, religion, sex, age, national origin, sexual orientation, gender identity or expression, disability, veteran status, or marital status. Application by members of all underrepresented groups is encouraged. The University of New Hampshire is an Equal Opportunity/Affirmative Action institution.

All applicants will be required to apply online at https://jobs.usnh.edu. Please direct all inquiries to: Genome Enabled Biology Search, Lisa Buchalski, COLSA search coordinator. 603-862-3626

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Texas A&M University System

Texas A&M Health Science Center

Faculty Positions in Biomedical Sciences Research

The Texas A&M Health Science Center Institute of Biosciences and Technology (IBT), http://ibt.tamhsc.edu/, an internationally recognized leader in biomedical research located at the Texas Medical Center in Houston, TX, is recruiting multiple faculty members at the level of assistant or associate professor to develop research programs that complement existing strengths in Cancer Biology, Infectious Disease and Environmental Health. Candidates with interests in basic and translational research in these areas are encouraged to apply.

Applicants should have M.D., Ph.D. or M.D./Ph.D. degree in biochemistry, cellular or molecular biology or a related science and an outstanding publication record; applicants at the Assistant Professor level should have at least 3 years post-doctoral experience. The IBT is entering an expansion phase and will be recruiting multiple new faculty who will receive highly competitive packages for salary, start-up and support for graduate education, along with outstanding laboratory and office space in the Texas A&M Health Science Center Alkek Building in the Texas Medical Center. Successful candidates will be expected to establish his/her independent research group, conduct highly meritorious research, establish collaborations with other investigators in the Texas Medical Center and components in the Texas A&M University System, and to obtain significant extramural funding.

Applications will be received and evaluated on a rolling basis until May 31, 2013. To apply, please send a cover letter, curriculum vitae, statement of research interests, copies of two key publications, and at least three reference letters to: Yi Xu, Ph. D., Chair of the Search Committee, Center for Infectious and Inflammatory Diseases, Institute of Biosciences and Technology, 2121 W. Holcombe Blvd., Houston, TX 77030-3303; E-mail: yxu@ibt.tamhsc.edu.

The Texas A&M Health Science Center is an Affirmative Action, Equal Opportunity Employer.

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Imperial College
London

Institute of Clinical Sciences

Chairs in Imaging Sciences


The Clinical Sciences Centre, an MRC funded Institute based at Imperial College’s Hammersmith Hospital Campus in London is seeking to increase its imaging research programmes as part of the development of a new Section of Integrative Biology and Innovative Imaging.

Our goal is to drive discovery and innovation through a fusion of clinical and basic imaging science research hosted within a vibrant multi-disciplinary Institute. Two new Groups in this section will be developing and applying imaging techniques to better understand complex biological systems and disease states in collaboration with epi/geneticists, computational scientists and cell biologists at the Institute. Our position as part of the Faculty of Medicine, Imperial College London and our co-location with Imperial College Healthcare NHS Trust will facilitate the translation of this understanding into improved diagnosis and treatment. To develop this strategy we are now seeking to appoint two outstanding clinical or non-clinical researchers at Professorial level who have the expertise and vision to contribute to the development of the Section and the overall aims of the Institute. One of the appointments will be to head the Imaging Sciences Department, and the other will be to lead a second research group within the Section. The successful candidates will have the opportunity to shape the redevelopment of the Department’s infrastructure including the installation of a new clinical MR scanner and refurbished laboratories.

An open workshop for prospective candidates will be held at the Clinical Sciences Centre in London on 14 February 2013.

For further information please contact Mr Lindsay Green, CSC Head of Operations (lindsay.green@imperial.ac.uk). An information pack is available on request.

Please apply online via our website http://www3.imperial.ac.uk/employment (please select “Job Search”, enter the job title or vacancy reference number HM2012213 into “Keywords”). Please complete and upload an application form as directed and submit any other relevant supporting documents such as your full CV.

If you are unable to apply online, please contact Mrs Maria Monteiro, Senior Appointments Co-ordinator, e-mail: m.monteiro@imperial.ac.uk

Closing date: 6 January 2013 (Midnight GMT).

Committed to equality and valuing diversity. We are also an Athena Bronze SWAN Award winner, a Stonewall Diversity Champion and a Two Ticks Employer.

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Washington University in St Louis

School of Medicine

Faculty Positions in Biochemistry and Molecular Biophysics

The Department of Biochemistry and Molecular Biophysics at Washington University School of Medicine invites applications for tenured and tenure-track faculty positions. Successful candidates will have established a strong record of research as an independent investigator, with external funding.

Outstanding individuals working in any area of biochemistry and molecular biophysics are encouraged to apply. The candidate’s research should be aimed at solving fundamental and important questions related to molecular mechanisms and addressing problems of biological or biomedical relevance. At present, research in the department spans a wide range of topics including membrane proteins, molecular motors, nucleic acid/protein interactions, protein folding and signal transduction.

Additional information about the department is available at http://www.biochem.wustl.edu.

Applicants should email their curriculum vitae and a brief description of their research interests to the Search Committee at search@biochem.wustl.edu. Applicants should include contact information for three individuals who can write letters of recommendation. The committee will request letters as necessary.

Completed applications will be reviewed on a rolling basis, starting immediately. For full consideration, applications should be received by March 1, 2013.

Washington University is an Equal Opportunity Employer. We are committed to the recruitment of candidates traditionally underrepresented on university faculties. Individuals of any race, ethnicity, gender or sexual orientation are encouraged to apply, as are disabled individuals and veterans. The School of Medicine at Washington University is committed to finding solutions to global health problems, including ones that affect minority and disadvantaged populations.

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Purdue University

Faculty Position in Evolutionary Biology
Department of Biological Sciences

The Department of Biological Sciences, Purdue University, invites applicants for a tenure-track faculty position in the area of Evolutionary Biology. We expect to fill one academic-year appointment at the Assistant Professor level. We seek candidates whose research integrates the fields of ecology and evolution through investigations in subfields including behavioral ecology, community ecology, conservation biology, evolutionary genetics, phylogenetics, physiological ecology, and/or population biology. Applicants must have a Ph.D. or equivalent in an appropriate discipline such as ecology, evolution or population biology, and at least 2 years of postdoctoral experience are highly recommended. The successful applicant is expected to conduct externally funded research that addresses fundamental questions in an area listed above; teach and mentor undergraduate and graduate students in the Ecology and Evolutionary Biology curriculum; and participate in ongoing programs in the Department of Biological Sciences.

The Department has over 50 faculty members conducting research in a wide range of fields including evolutionary biology, ecology, behavior, neurobiology, microbiology/virology, structural biology, developmental biology, molecular cell biology, and bioinformatics. Further information about the Department is available at http://www.bio.purdue.edu/. The successful candidate will have opportunities to interact with ecologists and allied scientists across the University, including colleagues in Discovery Park’s Center for the Environment and Bindley Bioscience Center. First-rate laboratory and computational facilities for analytical and systems work are available in the Department and allied Centers (e.g., Bioinformatics and Genomics Core Facilities), and field facilities are widely available in the surrounding landscape, including the Ross Biological Reserve that is owned and maintained by the Department of Biological Sciences.

Applications must be submitted electronically to https://hiring.science.purdue.edu as single PDF files that include detailed curriculum vitae, names and addresses of three referees, a 2 - 3 page summary of research interests, and a one-page teaching statement. Inquiries should be directed to Evolutionary Biology Search Committee, Department of Biological Sciences, Purdue University, 915 West State Street, West Lafayette, IN 47907-2054 or emailed to search@bio.purdue.edu. Review of applications will begin January 7, 2013 and continue until the position is filled. A background check will be required for employment in this position.

Purdue University in an Equal Opportunity/Equal Access/Affirmative Action Employer fully committed to achieving a diverse workforce.
Women in Science Booklet

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University of East Anglia

SCHOOL OF CHEMISTRY/JOHN INNES CENTRE

Senior Post Doctoral Research Associate  -  Ref: RA909

£30,242 to £36,298 per annum

Biosynthesis of alkaloids.

The post holder will contribute to a research project to deconvolute the mechanism of biosynthetic enzymes and explore the substrate specificity of these enzymes. This full time position is available from February 2013 for a period of two years, based in the laboratory in the John Innes Centre.

The post holder must have a PhD in Chemistry or a closely related discipline (or equivalent) and be able to fulfil all essential elements of the person specification. Specifically a candidate with an excellent publication record is required. Moreover, experience in biochemical projects and with molecular biology is required. Experience in chemical synthesis is desirable.

Closing date: 12 noon on 15 January 2013.

Further particulars and an application form are available on our website: www.uea.ac.uk/hr/jobs or Tel. 01603 593493.

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Postdoctoral program for PhDs from Italy in Israel

The Ministry of Foreign Affairs of Italy, with CNR, ENEA and ISS, have established postdoctoral programs aimed at outstanding graduates from Italian institutions to join one of the Israeli Centers of Research Excellence operating in the following fields:

Cognitive Science  Computer Algorithms
Human Disease  Solar Fuels


Deadline for applications January 15th, 2013

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Science Careers
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ASSISTANT/ASSOCIATE PROFESSOR
University of Louisville

The Institute of Molecular Cardiology (IMC), University of Louisville, has an immediate opening for a GMP Laboratory Director. This position includes a non-tenure-track appointment (Assistant/Associate Professor, depending on experience and qualifications). This individual will be responsible for managing a GMP facility for human cardiac stem cells for use in clinical trials. The successful applicant will oversee expansion and phenotyping, ensure careful quality control testing, keep accurate records of all pertinent aspects of cell cultures, write, and implement Standard Operating Procedures (SOPs), and comply with all federal reporting.

Requirements include a Ph.D./M.D./D.V.M. or equivalent, and a minimum two to three years of GMP laboratory experience. Applicants with expertise in stem cell biology will be strongly preferred. The IMC is home to several established research programs in diverse areas of cardiovascular pathophysiology and stem cell biology. We offer a competitive salary and startup support, a highly collegial cardiovascular environment, and abundant opportunities. Submit a cover letter, curriculum vitae, and three references to: Roberto Bolli, M.D., Director, Institute of Molecular Cardiology; ACB 3rd Floor, 550 South Jackson Street, Louisville, Kentucky 40292. E-mail: rbolli@louisville.edu.

University of Louisville is an Equal Opportunity/Affirmative Action Employer; women and minorities are encouraged to apply.

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