

**REGENERON**

# *We are a select team.*

Regeneron has very high standards for the people we hire. If you are talented enough to work here, then you join a team of very smart people from all walks of life who work together to achieve our goals. Individual effort is rewarded, but true success only comes when we work together as a team.

We are currently hiring candidates to join our select team. Apply at [regeneron.jobs/SCI](https://www.regeneron.com/jobs/SCI)

# Eppendorf & Science Prize for Neurobiology



**2009 Winner**  
**Richard Benton, Ph.D.**  
Assistant Professor  
University of Lausanne  
Switzerland

Get recognized!  
**US\$ 25,000**  
Prize



Deadline for entries  
**June 15, 2010**

It's easy to apply! Learn more at  
**[www.eppendorf.com/prize](http://www.eppendorf.com/prize)**

Congratulations to Dr. Richard Benton on winning the 2009 Eppendorf & Science Prize for his studies on odor detection in the fruit fly, *Drosophila*. His findings have revealed unexpected evolutionary parallels between insect chemosensation, immune recognition and synaptic transmission.

The annual international Eppendorf & Science Prize for Neurobiology honors young scientists for their outstanding contributions to neurobiology research based on methods of molecular and cell biology. The winner and finalists are selected by a committee of independent scientists, chaired by *Science's* Senior Editor, Dr. Peter Stern.

To be eligible, you must be 35 years of age or younger. If you're selected as this year's winner, you will receive US\$ 25,000, have your work published in the prestigious journal *Science* and be invited to visit Eppendorf in Hamburg, Germany.

**eppendorf**  
In touch with life



Biacore™ & MicroCal™

# Confidence that comes with the right interactions.

Label-free analysis using Biacore and MicroCal systems provides comprehensive characterization of biomolecular interactions and biomolecule stability. The information-rich data enables key insights into the biological processes and molecular binding mechanisms crucial to your research. Equipped with the right information, you can make speedy, smart decisions with confidence.

Visit [www.gelifesciences.com/interactions](http://www.gelifesciences.com/interactions)



Biacore systems

MicroCal DSC and iTC



imagination at work

# Enjoy first-time success

## Gene expression and function analysis sample and assay technologies by QIAGEN

Rely on QIAGEN's manual and automated workflow solutions for:

- Sample collection and disruption, and RNA purification
- Real-time PCR and RT-PCR, and gene expression assays
- RNAi and gene silencing
- miRNA purification and assays
- Methylation analysis in epigenetics research
- Protein sample preparation and assays

Making improvements in life possible — [www.qiagen.com](http://www.qiagen.com)



Sample & Assay Technologies

# Bioselect.

Now offering over 30,000 world-class antibodies, including exclusive Prestige Antibodies® powered by Atlas Antibodies.

Welcome to an antibody portfolio unmatched in scope and quality. With a continuously growing selection, our objective is to supply a highly validated antibody that you can trust to every known protein. Our library includes over 8,300 Prestige Antibodies, each with 700 immunohistochemistry, immunofluorescence and Western blot images available online. Sigma Life Science ensures you'll always have the highest caliber tools to advance your research.

[wherebiobegins.com/biomolecules](http://wherebiobegins.com/biomolecules)

**Prestige Antibodies®**

Powered by  **ATLAS**  
ANTIBODIES

Prestige Antibodies powered by Atlas Antibodies is a registered trademark of Sigma-Aldrich and Sigma-Aldrich Biotechnology, LP.

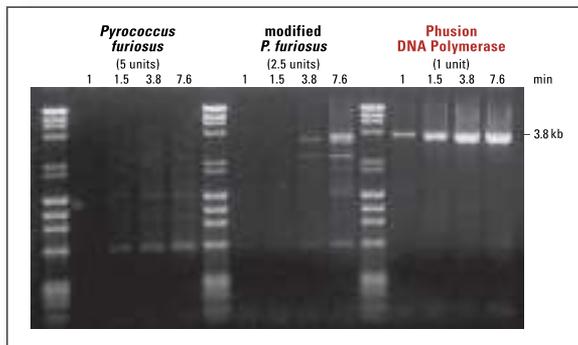


# UNPARALLELED CONFIDENCE

## PCR Reagents

There are already enough variables in PCR, don't let polymerase performance be one of them. Choose from one of the largest selections of polymerases for PCR applications from the leader in enzyme technology and bring unparalleled confidence to your experiments.

Not all PCR polymerases are created equal



Amplification of a 3.8 kb fragment from the human beta globin gene clearly illustrates the extreme speed and robustness offered by using Phusion DNA Polymerase. Reactions were performed according to the suppliers' recommendations using varying extension times (shown above gel).

Phusion is a registered trademark of Finnzymes Oy.

NEB has the polymerase for your application:

- Routine
- Hot start
- Fast
- High-fidelity
- Long or difficult templates
- High throughput
- Extraction-free PCR
- Master Mixes

Visit [confidentPCR.com](http://confidentPCR.com) to learn more, and to find PCR-related special offers.

CELEBRATING  
35  
YEARS



NEW ENGLAND  
**BioLabs** Inc.  
*enabling technologies in the life sciences*

CLONING & MAPPING

DNA AMPLIFICATION  
& PCR

RNA ANALYSIS

PROTEIN EXPRESSION  
& ANALYSIS

GENE EXPRESSION  
& CELLULAR ANALYSIS

# 10 Ways to Improve Your Chances of Securing Research Funding



RESEARCH



APPLICATIONS



NETWORKING



HOPING



WISHING



TANTRUM



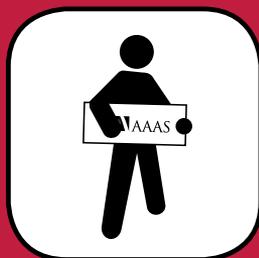
RABBIT'S FOOT



SLOTS



SELF-FINANCING



JOINING

There are many approaches to securing funding, but not all are effective. That's why the American Association for the Advancement of Science is committed to offering its members a variety of resources to help them locate the money they need—including an ongoing analysis of R&D budgets and funding, and an extensive directory of funding opportunities. Join us. Together we can make a difference. [aaas.org/plusyou](http://aaas.org/plusyou)

 AAAS + U = Δ



# Simply better pipetting!

## The new electronic pipette Eppendorf Xplorer®



The new electronic pipette Eppendorf Xplorer had been developed for high professional demands. The intuitive handling concept and ergonomic design are setting new standards for precision, reproducibility and simplicity. The turn dial enables easy selection of all basic functions. During development of the Xplorer, Eppendorf had those users in mind who are required to handle complex or lengthy pipetting series without getting lost among the many different volumes or individual steps. So, no more lost time due to complicated programming or rigid procedures.

Instead: accurate selection of parameters, maximum reproducibility of results, fatigue-free work. In addition, the "up is up and down is down™" principle of the innovative multifunction-rocker offers complete control over all pipetting processes. This is always important, whether the application is for the purpose of scientific research or clinical diagnostics.



Coming soon!

# Whoever doesn't have one wants one

Eppendorf Xplorer® –  
the new electronic pipette.

Simply better pipetting:

- Intuitive handling concept
- Optimal ergonomics
- Very high reproducibility

[www.eppendorf.com/xplorer](http://www.eppendorf.com/xplorer)

**eppendorf**  
*In touch with life*

# Does moral action depend on reasoning?

## Not really. Less than it should.

What if most humans, regardless of their culture or religious beliefs or age or sex, chose the same option when faced with a moral conflict? What if those same people gave wildly different reasons for why they made their particular choices?

This, in fact, is the state of affairs for much of our moral behavior. Recent research in human brain science and ancillary fields has shown that multiple factors feed into the largely automatic and deterministic processes that drive our moral decisions. Some



theorists think that our brains possess a finite number of moral modules that have certain

response biases. These unconscious biases explain the reliability and predictability of our moral behavior, even though experimental subjects, when queried, will make up various stories about why they did one thing over another. These inherent moral modules are thought to be the product of evolution and to represent optimal responses, from the point of view of natural selection, to matters dealing with purity, cheating, killing, and the like.

Other theorists argue that it is through experience and culture that we learn how to play by the rules of our social group...

CONTINUED ONLINE.

Michael Gazzaniga is the director of the SAGE Center for the Study of Mind at the University of California, Santa Barbara. He is president of the Cognitive Neuroscience Institute and the author of, among many other books, *The Ethical Brain: The Science of Our Moral Dilemmas*.

My camera has a set of handy, point-and-shoot settings ("portrait," "action," "landscape") that enable a bumbler like me to take decent pictures most of the time. It also has a manual mode that allows me to adjust everything myself,



which is great for those rare occasions when I want to try something fancy. A camera with

both automatic settings and a manual mode exemplifies an elegant solution to an ubiquitous design problem, namely the trade-off between *efficiency* and *flexibility*. The automatic settings are highly efficient, but not very flexible, and the reverse is true of the manual mode. Put them together, however, and you get the best of both worlds, provided that you know when to manually adjust your settings and when to point and shoot...

CONTINUED ONLINE.

Joshua D. Greene is an assistant professor of psychology at Harvard University and the director of the Moral Cognition Lab. He uses neuroscientific and behavioral methods to study moral judgment and decision-making, as well as other traditionally philosophical topics.

## Reason isn't enough.

Would that reason were enough to keep us moral. But it isn't, and we know it isn't, and people have known this for a very long time. Aristotle

pointed this out in his critique of Socrates' view that knowledge leads to virtue. What, he asked, about *akrasia*, weakness of the will? Knowing what is good and doing it are two very different things.

In his Epistle to the Romans, Paul was eloquent on the subject: "What I want to do," he said, "I do not do, but what I hate I do." Our will seems to have a will of its own, only tangentially connected to the mind. The Hebrew Bible tells us that after the early failures of humanity, "The Lord saw how great man's wickedness on the earth had become, and that every inclination of the thoughts of his heart was only evil all the time. The Lord was grieved that he had made man on the earth, and his heart was filled with pain." I know of no more searing passage in the whole of religious literature.

The subject was given its characteristically modern form by Charles Darwin, who approached it from the opposite perspective. Darwin was puzzled by the question of why people are moral at all. If natural selection is true, it should surely sift out the altruists so that only the ruthless survive. Those who risk their lives for the sake of others are more likely to die without passing their genes on to the next generation...

CONTINUED ONLINE.

Jonathan Sacks became Chief Rabbi of the United Hebrew Congregations of the British Commonwealth in 1991. A recipient of the Jerusalem Prize and a life peer in the House of Lords, he has written more than a dozen books.

## Yes and no, happily.

Evolution has endowed us with certain emotions, without which morality could have no purchase on us. But



these emotions, though necessary to develop a moral sense, are not sufficient, and it is our

capacity for reason that carries us forth into the moral life.

Morality paradigmatically concerns our obligations toward others, and moral struggles typically demand that we resist favoring ourselves to the exclusion of others. It is easy to see why we have evolved a preferential attitude toward our own lives. The bulk of our emotions can be understood as the affective concomitants of our lifelong project of persisting on this earth as long and as well as we can.

Among these emotions is the sentiment of outrage, particularly outrage on our own behalf. Even outrage of this self-regarding sort is a proto-moral emotion. It refers to how one person (someone other than myself) ought to behave toward another person (myself)...

CONTINUED ONLINE.

Rebecca Newberger Goldstein's most recent book is *36 Arguments for the Existence of God: A Work of Fiction*. A MacArthur Foundation Fellow, she is also the author of the nonfiction works *Betraying Spinoza* and *Incompleteness: The Proof and Paradox of Kurt Gödel*.

To read these essays in their entirety, or to receive a printed version, visit [www.templeton.org/reason](http://www.templeton.org/reason).

JOHN TEMPLETON FOUNDATION

SUPPORTING SCIENCE ~ INVESTING IN THE BIG QUESTIONS

THIS IS THE SIXTH IN A SERIES OF CONVERSATIONS AMONG LEADING SCIENTISTS, SCHOLARS, AND PUBLIC FIGURES ABOUT THE "BIG QUESTIONS." TO JOIN THE CONVERSATION, PLEASE VISIT [WWW.TEMPLETON.ORG/REASON](http://WWW.TEMPLETON.ORG/REASON).

Submission  
deadline  
**August 1**

# Your name here.



## The GE & Science Prize for Young Life Scientists. Because brilliant ideas build better realities.

Imagine standing on the podium at the Grand Hotel in Stockholm, making your acceptance speech for the GE & Science Prize for Young Life Scientists. Imagine having your essay read by your peers around the world. Imagine discussing your work in a seminar with other prize winners and Nobel Laureates. Imagine what you could do with the \$25,000 prize money. Now stop imagining. If you were awarded your Ph.D. in molecular biology in 2009, then submit your 1000-word essay by August 1, and you can make it reality.

Want to build a better reality? Go to [www.gescienceprize.org](http://www.gescienceprize.org)



GE & Science  
Prize for Young  
Life Scientists



\* For the purpose of this prize, molecular biology is defined as "that part of biology which attempts to interpret biological events in terms of the physico-chemical properties of molecules in a cell".

(*McGraw-Hill Dictionary of Scientific and Technical Terms, 4th Edition.*)

GE Healthcare Bio-Sciences AB,  
Björkgatan 30, 751 84 Uppsala, Sweden.  
© 2010 General Electric Company

- All rights reserved.  
28-9402-06AB



# sunlight



# fuels

Arizona State University scientists are developing cyanobacteria and algae as sources of environmentally-friendly fuel that is efficiently produced by solar energy conversion.

Discover a world of new energy at ASU.

[asulightworks.com](http://asulightworks.com)

**ASU** ARIZONA STATE UNIVERSITY



**AAAS is here –**  
helping educators make  
informed decisions.

For many K-12 teachers and librarians, tight budgets mean every purchase needs to deliver maximum value in the classroom. With *Science Books & Films (SB&F)* AAAS provides educators a way to find the best resources and the best values. With hundreds of book and movie reviews *SB&F* helps science educators bring the best tools to their schools. As a AAAS member your dues support these efforts

If you're not yet a AAAS member, join us. Together we can make a difference.

To learn more,  
visit [aaas.org/plusyou/sbf](http://aaas.org/plusyou/sbf).

 AAAS + U = Δ

## NEW PRODUCTS FOCUS: IMAGING AND MICROSCOPY

## IMAGE LAB SOFTWARE



Traditionally, optimizing image quality in a gel documentation system requires a high degree of fine-tuning. New Image Lab software can change how researchers use their gel documentation systems by offering an easy-to-use, fully automated image capture and analysis system that delivers high-quality images when used with the Molecular Imager Gel Doc XR+ or ChemiDoc XRS+ system. The software requires no special training to operate, optimizing image capture, analysis, and reporting in a single automated workflow. The software automatically calibrates the Gel Doc XR+ and ChemiDoc XRS+ systems at initial setup, so when a sample is imaged for a given application it is always in focus—at any sample height, at any zoom level, and in any user's hands.

**Bio-Rad**

For info: 800-424-6723 | [www.bio-rad.com](http://www.bio-rad.com)

## PEROXIDASE SUBSTRATES

Vector Laboratories has expanded its ImmPACT series of peroxidase-based chromogen substrate kits to include all of its colored substrates, including ImmPACT DAB (brown), ImmPACT AEC (red), ImmPACT VIP (purple), ImmPACT SG (gray/blue), and ImmPACT NovaRED (red). The new kits feature novel chemistry to generate greater sensitivity and crisper, darker staining precipitates than traditional peroxidase substrates. These features offer potential cost savings by enabling greater dilution of primary antibodies in addition to easier interpretation of results. The kits are suited for single-staining or double-staining using immunohistochemistry methods on tissue sections and cells. The kits can be used manually or on automated staining instruments.

**Vector Laboratories**

For info: 650-697-3600 | [www.vectorlabs.com](http://www.vectorlabs.com)

## AUTOMATED MICROSCOPE

The design of the RAMM (Rapid Automated Modular Microscope) system allows a custom system to be easily developed. The microscope is configurable with infinity-corrected optics, dichroic filter cubes, multiwavelength excitation and emission filter wheels, and detectors including cameras and photomultipliers. A wide range of automated features can be added, including high-speed XY stages, precision piezo and motorized Z focusing, autofocus, and a robotic specimen loader. The system provides a solid platform for high throughput screening, genetic sequencing, experimental research, and more. It is designed to be flexible and cost effective enough to be incorporated into original equipment manufacturing development.

**Applied Scientific Instrumentation (ASI)**

For info: 800-706-2284 | [www.ASIimaging.com](http://www.ASIimaging.com)

## PULSED XENON SOURCE

A high-intensity pulsed xenon source for the Jaz modular sensing system offers a high pulse rate with great pulse-to-pulse stability. The Jaz-PX is a high flash-rate, short-arc xenon lamp especially useful for ultraviolet/visible light applications such as absorbance, bioreflectance, fluorescence, and phosphorescence. The lamp has a maximum pulse frequency of 500 Hz and spectral response from 190–1,000 nm. Jaz is a family of stackable, modular components that share common electronics and communications. At its heart is a

miniature linear charge-coupled device-array spectrometer, available with a user-selected grating and entrance slit optimized for a variety of application needs, in a design that accommodates up to eight spectrometer channels.

**Ocean Optics**

For info: 727-733-2447 | [www.OceanOptics.com](http://www.OceanOptics.com)

## LABEL-FREE FROZEN CELLS

Sixty new frozen cells validated for cAMP and AequoScreen luminescence are available in off-the-shelf aliquots of 2.5 million and 10 million cells, respectively. Frozen cells can delink lengthy cell culture processes from functional testing of G protein-coupled receptors (GPCR) and are available for a wide range of target families. The user simply thaws a vial as needed for use directly in a functional, cellular assay with previously validated performance. The process's optimized and standardized culture conditions eliminate variability in sensitivity and response amplitude between different batches of cells. Ready-to-use AequoZen and cAMPZen frozen cells are a convenient option for the characterization in multiple assays of drugs in development and are a cost-effective alternative to perform cellular GPCR selectivity studies on multiple receptors at a time.

**PerkinElmer**

For info: 781-663-5871 | [www.perkinelmer.com/celllines](http://www.perkinelmer.com/celllines)

## ARC LAMP REPLACEMENT

The Spectra light engine provides seven discrete solid-state outputs spanning the complete visible spectrum, making it a true arc lamp replacement. The product complements Lumencor's family of multicolor light engine products for microscopists, researchers, and original equipment manufacturers. In addition to offering a multitude of outputs, covering the full visible spectrum from 380 nm to 680 nm, this new light engine features increased power per band for each channel over the existing light engine model outputs. The product has an updated streamlined design, full electronic control of intensity and switching speed in the time frame of tens of microseconds, and a dosimeter option. Adapters for all major makes and models of microscopes are available and custom adapters are available on request.

**Lumencor**

For info: 503-530-1008 | [www.lumencor.com](http://www.lumencor.com)

Electronically submit your new product description or product literature information! Go to [www.sciencemag.org/products/newproducts.dtl](http://www.sciencemag.org/products/newproducts.dtl) for more information.

Newly offered instrumentation, apparatus, and laboratory materials of interest to researchers in all disciplines in academic, industrial, and governmental organizations are featured in this space. Emphasis is given to purpose, chief characteristics, and availability of products and materials. Endorsement by *Science* or AAAS of any products or materials mentioned is not implied. Additional information may be obtained from the manufacturer or supplier.

# Call for Papers

# Science Translational Medicine

Integrating Medicine and Science

**Chief Scientific Adviser**

**Elias A. Zerhouni, M.D.**

Senior Fellow, Global Health Program,  
Bill & Melinda Gates Foundation  
Former Director,  
National Institutes of Health

**Senior Scientific Advisor**

**Elazer Edelman**

Thomas D. and Virginia W. Cabot Professor  
of Health Sciences and Technology  
Massachusetts Institute of Technology

**Editor**

**Katrina L. Kelner, Ph.D.**

**Senior Editor**

**Kelly LaMarco, Ph.D.**

**Associate Editor**

**Lily Khidr, Ph.D.**

**Science Translational Medicine**, from AAAS, the publisher of *Science*, focuses on the conversion of basic biomedical research into practical applications, thus bridging the research-to-application gap, linking basic scientists and researchers.

Submit your manuscripts for review in the following areas of translational medicine:

- Cardiovascular Disease
- Neuroscience/Neurology/  
Psychiatry
- Infectious Diseases
- Cancer
- Health Policy
- Bioengineering
- Chemical Genomics/  
Drug Discovery
- Applied Physical  
Sciences
- Drug Delivery
- Gene Therapy/  
Regenerative Medicine
- Cell Culture, Animal,  
and Human Studies
- Other Interdisciplinary  
Approaches to Medicine

Submit your research at  
[www.submit2scitranslmed.org](http://www.submit2scitranslmed.org)

Subscribing to **Science Translational Medicine** ensures that you and your lab have the latest translational medicine resources. For more information, visit [ScienceTranslationalMedicine.org](http://ScienceTranslationalMedicine.org)



For more information see  
[ScienceTranslationalMedicine.org](http://ScienceTranslationalMedicine.org) or  
contact [scitranslmededitors@aaas.org](mailto:scitranslmededitors@aaas.org)

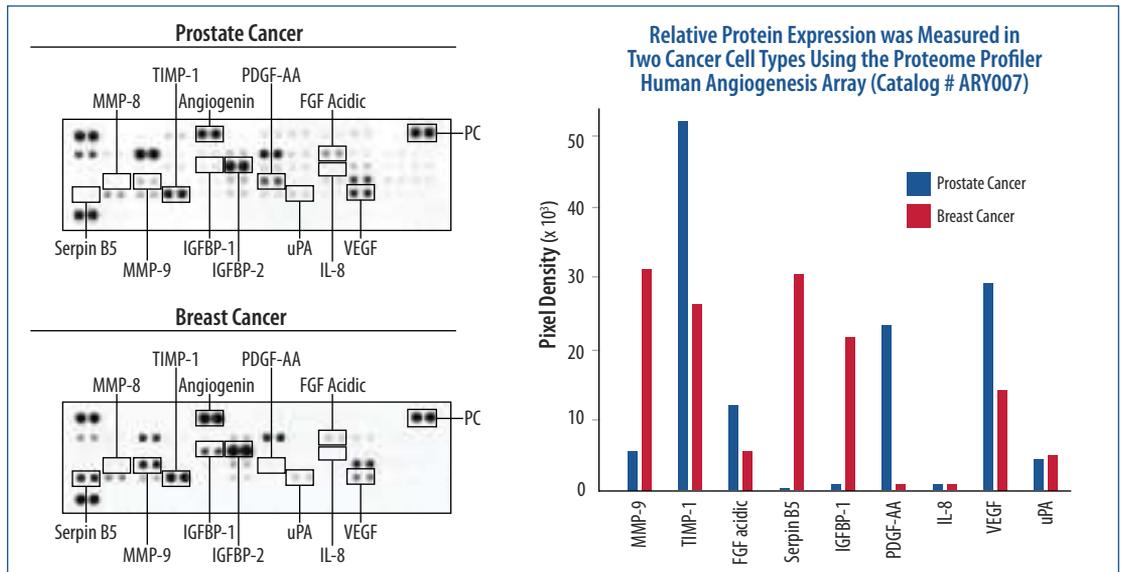
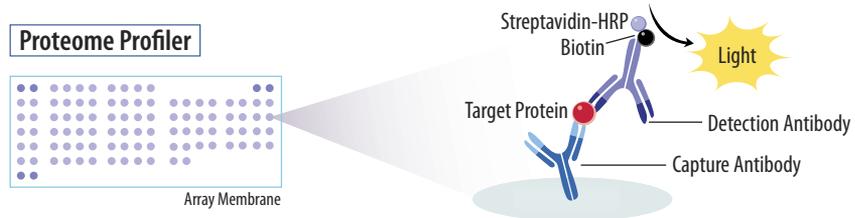


[ScienceTranslationalMedicine.org](http://ScienceTranslationalMedicine.org)

- Cancer
- Development
- Endocrinology
- Immunology
- Neuroscience
- Proteases
- Stem Cells

# R&D Systems MultiAnalyte Profiling Kits for Cancer Research

Cancer is a disease of context-dependent cellular dysfunction that can involve a range of biological activities. Because of its complexity, quality research tools designed to simultaneously study multiple cancer-related factors are crucial for rapidly advancing our understanding of cellular transformation. R&D Systems Proteome Profiler™ Antibody Arrays allow for the concurrent detection of multiple intracellular or secreted proteins without the need for individual Western blot experiments or specialized laboratory equipment.



For more information visit our website at [www.RnDSystems.com/go/ProteomeProfiler](http://www.RnDSystems.com/go/ProteomeProfiler)

For research use only. Not for use in diagnostic procedures.

