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University of California, San Francisco

Marvin Caruthers
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Prof. F. CATTABRIGA, Inst. of Pharmacology, University of Urbino, Urbino, Italy
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Dr. P.W. MOLEN, Ronse Bioenvirosearch Lab., P.O. Box 878, Karlsville, NL, Canada DAIN 4H6
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March 1982 - to be announced

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Prof. J.O. MACLEVY, Marine Fish Res. Inst., Univ. of Maine, OCE 4409, USA
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Prof. H. HASSELMAN, East-Plack Inst. Meteoogog, Bundesut 55, 2000 Hamburg 13, Germany
November 1982 - Hamburg, Germany

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A curiously tenacious that's saving millions

Hal Shaub discovered the molecule's properties at Exxon Research and Engineering Company.

Hal Shaub (Ph.D. Chemistry), Senior Research Associate in Exxon Research and Engineering Company, discovered some curious properties of a molecule in his work to develop fuel-saving motor oils. "It's a very tenacious molecule," Hal says, "sporting a pair of highly polar 'feet' that attach to positive and negative sites on metal surfaces."

Two Kinds of Friction

In a typical internal combustion engine, a considerable amount of fuel is consumed in overcoming friction. It has two sources: rubbing where lubricant film fails and metal-to-metal contact occurs, and drag caused by the viscosity of the lubricant itself. Friction can be reduced by lowering oil viscosity, but there is a point at which friction begins to increase due to failure of the lubricant film and resulting metallic contact. To Hal, this suggested developing sturdier lubricant films.

Hal uses a unique laboratory device to assess additives—Exxon's "ball on cylinder" test that simulates conditions in parts of the engine where lubricant films commonly give way. The test gives positive laboratory confirmation that the curious two-footed molecule reduces friction. But it has also raised puzzling questions about how and why.

Two Theories on How the Molecule Works

The additive that Hal discovered actually seems to chemisorb on steel surfaces, reducing metallic contact under thin lubricant film conditions.

One theory is that this chemisorption reduces adhesive wear, and low friction prevents sub-surface fatigue wear. So stresses exerted by the load cause plastic deformation of rubbing steel surfaces—resulting in smoother surfaces and less friction.
ELECTROCHEMICAL REACTIONS
This topic contains abstracts on all phases of electrochemical reactions such as electrolysis, electrooxidation, electrodeposition, polarography, photochemistry, and macromolecular chemistry. The topic is subdivided into three sections: (A) electrochemical reactions in biochemistry, organic, and inorganic chemistry; (B) electrochemical reactions in applied, physical, and inorganic chemistry; and (C) polarographic reactions (including abstracts that may also cover other electrochemical reactions). Abstracts emphasizing analytical electrochemistry are not routinely included.

GAS CHROMATOGRAPHY
This topic covers the theory and all applications of gas chromatography in chemical analysis. Coverage is also provided for gas-liquid and vapor phase chromatography, flame ionization detectors, instrumentation and apparatus for gas chromatography.

HIGH PERFORMANCE LIQUID CHROMATOGRAPHY
This alerting service includes papers on such aspects of high speed liquid chromatography as high pressure, high performance, and high resolution liquid chromatography. Solid-liquid column chromatography and ion-exchange chromatography are also covered.

MASS SPECTROMETRY
This CA Selects topic is concerned with all aspects of mass spectrometry in the field of methodology, apparatus, and experimental results obtained by the various spectrometric techniques. These latter include studies concerned with structure, thermodynamics, reaction kinetics and mechanisms, and analytical applications. Although not strictly within the definition of mass analysis, certain related techniques (e.g., ion-cyclotron-resonance spectrometry, ion-kinetic-energy spectrometry) are included in the coverage. Excluded are mass studies on subatomic particles.

ORGANOSILICON CHEMISTRY
This CA Selects topic provides broad coverage of the field of organosilicon chemistry. Included are papers on compounds containing siliconcarbon bonds, silanes, siliconolophanes, silanes, siliconolophanes, siliconhydrides, and siliconhaldes (e.g., bromides, chlorides, and iodides). Studies on silicas and siliconoil are also given.

PHOTOCHEMISTRY
This CA Selects topic covers such areas of photochemistry as fluorescence, luminescence, phosphorescence, photochromism, photophores, light-induced excited state interactions, and photochemical mechanisms. Studies of photochemical reactions of molecules in their theoretical, mechanistic, and synthetic aspects, as well as experimental and instrumental methods, are covered.

Topics related to photobiology, photosynthesis, photography, absorption and emission spectra, photoelectric and photomagnetic effects, photocopy processes, x-ray luminescence, and x-ray luminescence are not included.

SURFACE CHEMISTRY (PHYSICOCHEMICAL ASPECTS)
This topic covers items relating to the physical chemistry of surfaces such as adsorption, desorption, properties of solid surfaces, surface defects, surface interactions, adsorption. Excluded from coverage are papers dealing with the physical chemistry of thin metallic films and the surface states of semiconductor materials.
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Regular Registration: $275 (includes Banquet and Subscription to the Journal, DNA)
Student Registration: $175 (includes Banquet only). Must be verified in writing by Department Head.

□ Please reserve ________ space(s): Registration fee must be included.
□ Will register On-Site (On-Site Registration will start on Sunday, February 14th 12:00 noon)

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Return to: DNA, c/o Scherago Associates, Inc.
1515 Broadway, New York, N.Y. 10036
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3\(^{3}\text{H}\) Nucleotides ready to pipet

To save you the bother of removing or concentrating the packaging solution, we've packaged seven 3\(^{3}\text{H}\) nucleotides in aqueous solution at 2.5mCi/ml.

At the same time we extended their radiochemical stability with 10mM Tricine, a proven stabilizer known to be compatible in research systems.

**TTP** [methyl-\(3^{3}\text{H}\)]- 50-80Ci/mmopol
NET-221A 250µCi 1mCi 5mCi in dry ice

**TTP** [methyl-1', 2-\(3^{3}\text{H}\)]- 90-110Ci/mmopol
NET-520A 1mCi 5mCi in dry ice

dATP [8-\(3^{3}\text{H}\)]- 10-25Ci/mmopol
NET-268A 250µCi 1mCi 5mCi in dry ice

dCTP [5-\(3^{3}\text{H}\)]- 15-30Ci/mmopol
NET-369A 250µCi 1mCi 5mCi in dry ice
dGTP [5, 5'-\(3^{3}\text{H}\)]- 40-60Ci/mmopol
NET-601A 1mCi 5mCi in dry ice
dGTP [8-\(3^{3}\text{H}\)]- 5-15Ci/mmopol
NET-429A 250µCi 1mCi 5mCi in dry ice
dGTP [8, 5'-\(3^{3}\text{H}\)]- 25-50Ci/mmopol
NET-448A 1mCi 5mCi in dry ice

Also available in standard ethanol:water packaging by deleting the A from the ordering number.

Circle No. 270 on Readers' Service Card

\(\omega-3\) Polyunsaturated Fatty Acids

For studies of the metabolic pathways and biological actions of these acids

Linolenic acid, 9, 12, 15-[\(\text{\text{-}3^{3}\text{H}}\)]- 40-60mCi/mmopol Ethanol under argon, in dry ice
NEC-779 50µCi 250µCi

Docosahexaenonic acid, 4, 7, 10, 13, 16, 19-[\(\text{\text{-}3^{3}\text{H}}\)]- >100mCi/mmopol Ethanol under argon, in dry ice
NEC-784 5µCi 10µCi

Eicosapentaenonic acid, 5, 8, 11, 14, 17-[\(\text{\text{-}3^{3}\text{H}}\)]- 40-60mCi/mmopol Ethanol under argon, in dry ice
NEC-772 10µCi 50µCi

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Calmodulin \([\text{\text{-}125^{3}\text{I}}]\)

Stable. Produced by Bolton-Hunter Reagent conjugation to bovine brain calmodulin
Tested for antibody binding

Calmodulin,\([\text{\text{-}125^{3}\text{I}}]\)-
50-150µCi/µg
0.05M phosphate buffer, pH 7.4, 0.1M NaCl
0.1% gelatin, 0.05% sodium azide
NEX-172 5µCi 10µCi
Also available ... Calmodulin,\([\text{\text{-}125^{3}\text{I}}]\)- RIA Kit

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Iodocyanopindolol \([\text{\text{-}125^{3}\text{I}}]\)

Specific to \(\beta_1\) and \(\beta_2\) adrenergic receptors
Higher affinity (\(K_d\)~27-40pmol) and specificity than iodohydroxy benzoylpindolol
Carrier-free ~5400µCi/µg
Iodocyanopindolol,\([\text{\text{-}125^{3}\text{I}}]\)-
2200Ci/mmopol
n-Propanol:water:phenol (50:50:1.2), in dry ice
NEX-174 100µCi 500µCi 1mCi

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FSH, LH \([\text{\text{-}125^{3}\text{I}}]\)

Follicle Stimulating Hormone,\([\text{\text{-}125^{3}\text{I}}]\)-
50-100µCi/µg
Lyophilized from sodium phosphate buffer, pH 7.4, containing BSA and a proteolytic enzyme inhibitor
NEX-173 10µCi 25µCi 100µCi

Luteinizing Hormone,\([\text{\text{-}125^{3}\text{I}}]\)-
50-100µCi/µg
Lyophilized from sodium phosphate buffer, pH 7.4, containing BSA and a proteolytic enzyme inhibitor
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The most powerful minicomputer ever designed.
A device so far ahead of any other that the numbers speak for themselves:

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<td>Whetstone 1</td>
<td>3760 Whets (x1000)</td>
</tr>
<tr>
<td>Whetstone 2</td>
<td>2297 Whets (x1000)</td>
</tr>
<tr>
<td>Real-Time Simulation</td>
<td>22.4 Seconds</td>
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</tbody>
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NEN introduces the first cell-free Translation System designed for the study of processed proteins.

Everything is in the package, including dog pancreatic microsomal membranes, dilution buffer, a positive mRNA control for monitoring system performance, and a protocol. Now you can spend less time preparing materials and free more time for evaluating results.

The Protein Processing Translation System, $\[^{35}S\]$- joins our family of pretested systems for molecular biology in offering both convenience and reproducibility. The components, listed below, are subjected to a complete processing assay prior to shipment. The resulting Methionine, $\[^{35}S\]$- incorporation curve and autoradiogram are included in the quality control results you receive with the system.

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  - 3'-dATP, $[^{32}P]$
- 5' End Labeling System:
  - ATP, $[^{32}P]$
DNA Sequencing System
Transcription Systems:
- UTP, $[^{32}P]$- and GTP, $[^{32}P]$
Translation Systems:
- Methionine, L-$[^{35}S]$
- Leucine, L-$[^{3}H]$
- and Proline, L-$[^{3}H]$

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NEI-603 (~10,000 assays)
Sheep anti-mouse Ig-conjugate system
NEI-604 (~20,000 assays)

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NEI-605 (~20,000 assays)

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- **TTP** [methyl-1', 2'-3H]- 90-110Ci/mmolk
  - NET-520A 1mCi 5mCi in dry ice
- **dATP** [8-3H]- 10-25Ci/mmolk
  - NET-268A 250μCi 1mCi 5mCi in dry ice
- **dCTP** [5-3H]- 15-30Ci/mmolk
  - NET-369A 250μCi 1mCi 5mCi in dry ice
- **dCTP** [5, 5'-3H]- 40-60Ci/mmolk
  - NET-601A 1mCi 5mCi in dry ice
- **dGTP** [8-3H]- 5-15Ci/mmolk
  - NET-429A 250μCi 1mCi 5mCi in dry ice
- **dGTP** [8, 5'-3H]- 25-50Ci/mmolk
  - NET-448A 1mCi 5mCi in dry ice

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For studies of the metabolic pathways and biological actions of these acids

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  - NEC-779 50μCi 250μCi
- **Docosahexaenoic acid**, 4, 7, 10, 13, 16, 19-[14C(U)]-
  - >100Ci/mmolk Ethanol under argon, in dry ice
  - NEC-784 5μCi 10μCi
- **Eicosapentaenoic acid**, 5, 8, 11, 14, 17-[1-14C]-
  - 40-60Ci/mmolk Ethanol under argon, in dry ice
  - NEC-772 10μCi 25μCi
- **Eicosapentaenoic acid**, 5, 8, 11, 14, 17-[14C(U)]-
  - 50-100Ci/mmolk Ethanol under argon, in dry ice
  - NEC-754 5μCi 10μCi

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**Calmodulin [125I]**

Stable. Produced by Bolton-Hunter Reagent conjugation to bovine brain calmodulin

Tested for antibody binding

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**Iodocyanopindolol [125I]**

Specific to β, and βadrenergic receptors

Higher affinity (K<sub>D</sub> = 27-40 pmol) and specificity than iodohydroxybenzylpindolol

Carrier-free 5400μCi/μg

**Iodocyanopindolol**, 22-00Ci/mmolk

n-Propanol:water:phenol (50:50:1.2), in dry ice

NEX-174 100μCi 500μCi 1mCi

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**FSH, LH [125I]**

**Follicle Stimulating Hormone**, 50-100μCi/μg

Lyophilized from sodium phosphate buffer, pH 7.4,

containing BSA and a proteolytic enzyme inhibitor

NEX-173 10μCi 25μCi 100μCi

**Luteinizing Hormone**, 50-100μCi/μg

Lyophilized from sodium phosphate buffer, pH 7.4,

containing BSA and a proteolytic enzyme inhibitor

NEX-170 10μCi 25μCi 100μCi

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<table>
<thead>
<tr>
<th>Xerox 820</th>
<th>Hewlett-Packard 125 — Model 10</th>
<th>IBM Personal Computer</th>
<th>Apple III</th>
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<td>Standard Memory</td>
<td>64K</td>
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<td>128K</td>
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<td>Maximum Memory when fully configured*</td>
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<th>Expandability</th>
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<td>Mass Storage (per drive)</td>
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<td>CP/M* library</td>
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* "Fully configured" means system includes, at minimum, monitor, printer, 2-disk drives and RS-232 communicator. NOTE: Chart based on manufacturer's information available as of December, 1981.
New Translation System for Protein Processing

NEN introduces the first cell-free Translation System designed for the study of processed proteins.

Everything is in the package, including dog pancreatic microsomal membranes, dilution buffer, a positive mRNA control for monitoring system performance, and a protocol. Now you can spend less time preparing materials and free more time for evaluating results.

The Protein Processing Translation System, $^{35}$S-joins our family of pre-tested systems for molecular biology in offering both convenience and reproducibility. The components, listed below, are subjected to a complete processing assay prior to shipment. The resulting Methionine, $^{35}$S- incorporation curve and autoradiogram are included in the quality control results you receive with the system.

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5' End Labeling System:
- ATP, $^{32}$P-

DNA Sequencing System
Transcription Systems:
- UTP, $^{32}$P-
- GTP, $^{32}$P-
Translation Systems:
- Methionine, L-$^{35}$S-
- Leucine, L-$^{3}H$-
- and Proline, L-$^{3}H$-

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- What Lies Ahead for Science and Technology Policy
- Current Science Issues—The Continuing DNA Controversy
- Science and Engineering Fellows in the Congressional Arena

Representatives of congressional committees concerned with science and technology will participate.

WHEN: Tuesday, 5 January 1982, 6:00 p.m. to 7:30 p.m.
WHERE: Capital Hilton/Senate Room
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