PCR products. Synthetic Genetics announces the availability of polymerase chain reaction (PCR) products, specifically primers and probes, which amplify human immunodeficiency virus (HIV) and other nucleic acid sequences through Cetus's Gene-Amp™ PCR process. These products are produced for research purposes only. Synthetic Genetics, 10455 Roselle St., San Diego, CA 92121, USA. Telephone 800-562-5544 or 619-587-0320. Fax 619-587-2525. Circle 47 on Reader Service Card.

New laboratory appliances. Fisher Series laboratory hotplate, stirrer and stirring-hotplate line offers 26 models to select from in a choice of ceramic top (acid and alkali-resistant, exceptionally easy to clean), porcelain, and aluminum with baked-enamel finish. Appliance bodies are sleek, stable, low-profile designs, made of die-cast aluminum for durability and long laboratory life. Fisher Series appliances are available in sizes as small as 4" x 4" (10 x 10 cm) for micro-scale chemistries; maximum top-plate size is 12" x 12" (30 x 30 cm). The small aluminum-top stirrer comes with integral plate-support clamp for convenient mounting on lattices and stands. Fisher Scientific, 711 Forbes Ave., Pittsburgh, PA 15219, USA. Telephone 412-562-8468. Circle 49 on Reader Service Card.

New gel loader pipet tip. The new gel loader disposable capillary pipet tip provides added control and convenience in sample loading procedures for sequencing gels, vertical and horizontal electrophoresis gels, IEF tube gels, thin layer chromatography plates, and paper electrophoresis matrices. The Gel Loader's nonwetting surface offers accurate and precise delivery of samples from 0.5 to 10 µl. The capillary is less than 0.35 mm OD, and the tips have given excellent results in loading 0.25 mm sequencing gels. Because the capillary is 15 mm long, samples may be placed at the bottom of each well to eliminate cross-contamination. The tiny tip also controls sample size, a useful feature for TLC spotting applications.

Videotape series on laboratory techniques. State-of-the-art instructional videos produced by Taped Technologies teach technicians or students laboratory procedures. The newest videos feature actual experiments performed by scientists who use the techniques routinely. Tapes are detailed so that procedures can be performed without further illustration.

Comprehensive panel of immunomediator assays. The most comprehensive panel of immunomediator assays available in the U.S. is being offered by Cambridge Medical Technology Corporation. The panel includes kits for measuring tumor necrosis factor (TNF), interleukin 1B (IL 1B), interleukin 2 (IL 2), interferon-α (IFN-α) and interferon-γ (IFN-γ).

These kits can be used to assay serum, plasma, or culture supernatant samples. The IRMA formats feature an oligoclonal antibody system for increased sensitivity and specificity. TNF-IRMA and IFN-γ-IRMA are second-generation assays offering one-step, coated-tube simplicity. The TNF assay has a sensitivity of 5 pg/ml and features a standard range of 0 to 5000 pg/ml. The IFN-γ assay offers sensitivity to 0.25 IU/ml, and includes six standards ranging from 1-90 IU/ml. IL 1B, IL 2, and IFN-α are presented in a double antibody liquid phase format, and demonstrate sensitivity of 0.3 ng/ml, 0.5 ng/ml, and 8 IU/ml respectively. Cambridge Medical, 575 Middlesex Tpke., Billerica, MA 01865, USA. Telephone 617-935-4050. Fax 508-667-8651. Circle 57 on Reader Service Card.
Biological safety cabinet for microbiological studies, cell culture, and pharmaceutical procedures. The Baker Company announces their vertical laminar flow biological safety cabinet, SteriGARD, that exceeds the minimum standards for Class II, Type A/B3 cabinets, as defined by National Sanitation Foundation Standard #49. Designed with an airflow system to protect personnel, product, and environment, SteriGARD provides a work area that is virtually free from particulate contaminants, eliminating sample cross-contamination. A unique airflow design used in the SteriGARD cabinet creates a more impenetrable air barrier at the front of the cabinet, increasing the cabinet’s protective capabilities. In addition, all plenums and side-walls that contain contaminated air are kept under negative pressure, preventing any contaminated air from escaping into the laboratory. Precise control of airflow velocities and volumes is ensured through the use of Baker’s high velocity return air slots, located along the side walls of the work area. This feature prevents particulate contaminants from escaping into the surrounding environment, while inhibiting unfiltered air from entering the work area. Additional high velocity return air slots at the top and sides of the view screen prevent gases, vapors, or particulates from escaping into the operator’s environment and keep unwanted ambient air from migrating behind the screen and into the work area. A microbiological aerosol testing program validates personnel and product protection and cross contamination within the cabinet. Baker, P.O. Drawer E-Sanford Airport, Sanford, ME 04073, USA. Telephone 207-324-8773 or 800-992-2537. Circle 59 on Reader Service Card.

Autoimmune antibody screening. SciMedx announces an improved multisection autoimmune antibody screening slide, which can simultaneously detect circulating (ANA) nuclear, (MA) mitochondrial, (PCA) parietal cell, (SMA) smooth muscle and reticulin antibodies. This multisection slide can also screen for both thyroid antibodies, thyroglobulin, and microsomal. The tissue sections are easily distinguished in the slide well as they are aligned in a specific order—liver, kidney, stomach, and thyroid. Each tissue is cut in a specific shape to distinguish them. Antibody screening slide, catalog #21356, contains 10 × 6 well slides, which are stable for 12 months at 2 to 8°C. Cross contamination between wells is prevented by a gray hydrophobic slide mask.

FITC-labeled antihuman IgG H&L (absorbed to well cross reactivity) is available with Evans blue counterstain, catalog #1501 and without, #1500. Positive controls are also available separately: ANA-homogeneous, catalog #1202, speckled, #1203, nucleolar, #1204, mitochondrial, #2202, smooth muscle, #3202, parietal cell, #4202, microsomal, #5202, and thyroglobulin, #5203. SciMedx, 400 Ford Rd., Denville, NJ 07834, USA. Telephone 201-625-8822 or 800-221-5598. Circle 63 on Reader Service Card.

Microlab 1000 diluter/dispenser. The Microlab 1000 diluter/dispenser is highly accurate and precise, capable of accommodating liquid volumes of 1 μl to 25 ml. The Microlab 1000 can store up to 50 unique user-defined protocols via simple yes or no answers to a series of questions shown on the instrument’s LED display. To ease operation and ensure optimal precision and accuracy, the Microlab 1000 automatically calculates the optimum syringe size, valve size, and syringe speed for each application.

Fluid contact surfaces are limited to Kel-F, CTFE Teflon, and borosilicate glass ensuring maximum durability and solvent compatibility. The Microlab 1000, RS-232C compatible, can be applied to a variety of fluid-handling tasks, including routine clinical and analytical diluting, distributing, and dispensing. Hamilton, P.O. Box 10030, Reno, NV 89520-0012, USA. Telephone in Nevada, Alaska, Hawaii, or outside the U.S. 702-786-7077 or in the U.S. 800-648-5950. Circle 61 on Reader Service Card.

H and E reagent kit. Kirkegaard and Perry introduces an improved hematoxylin and eosin staining system for the researcher and veterinary diagnostician. The H and E reagent kit is designed for use in the classical mode, and optimized to provide an effective screening test for detecting tissue eosinophilia, an early sign of parasitic infestation in mammalian and avian species. Made of certified dyes, these reagent concentrates were evaluated on porcine, avian, and bovine tissues. Their versatility permits use of Hematoxylin for Harris, or dilution for Gill 1, 2, and 3, or Mayer staining; aqueous eosin Y can be diluted in distilled water, ethanol, methanol, or isopropyl. As aqueous liquids they reduce handling and exposure to hazardous chemicals and powders; as concentrates they save storage space and reduce shipping costs. The H and E reagent kit is stable indefinitely at room temperature. Kirkegaard & Perry Laboratories, 2 Cessna Ct., Gaithersburg, MD 20879, USA. Telephone 301-948-7755 or 800-638-3167. Circle 55 on Reader Service Card.
**CO₂ line-changing device.** Lab-Line Instruments announces a CO₂ line-changing device. The CO₂ Autochang, Model 336, safeguards against depletion of CO₂ supply by automatically switching from empty to full gas cylinders. When pressure in the active CO₂ line drops below 3 psi, switchover to the alternate cylinder occurs. A flashing LED and audible alarm reminds the user to replace the empty cylinder or cylinders. Gas flow from either cylinder may be selected manually. The unit is compact (8½"W × 10½"D × 4½"H), allowing for use on top of all automatic and continuous-flow CO₂ incubators. Lab-Line Instruments, 15th and Bloomingdale Aves., Melrose Park, IL 60160, USA. Telephone 312-450-2600. Circle 53 on Reader Service Card.

**Cell culture system for continuous production of proteins.** Kinetek Systems, Inc. introduces Network 2000, an automated instrument system for research-level production of proteins with mammalian cells that uses a bioreactor and a gas exchange cartridge both made of unique hollow fibers. Because of their ability to continuously secrete genetically engineered proteins such as biopharmaceuticals and vaccines in near-natural forms, mammalian cell lines have recently become the preferred organisms of the biotechnology industry for production.

The Network 2000 cell culture system offers research biologists in both academic and industrial laboratories a bench-top device that significantly reduces media consumption, user involvement, and chances of contamination. The hydraulic circuit, which is assembled on a removable tray with the bioreactor and the gas exchange cartridge, can be autoclaved and used intact. The system replaces most of the labor-intensive steps involved in the conventional technique of growing cells in plastic bottles or flasks in incubators where they require constant care and manipulation.

The Network 2000 system is a microprocessor-controlled, completely enclosed instrument that provides the necessary nutrients and oxygen to the cells in the bioreactor at precisely maintained rates and temperatures to support and enhance cell growth. The control module of the Network 2000 system may be separated from the hydraulic module for remote control of the operational functions.

The instrument, first of four systems under design, is based on Kinetek’s Hybrinet Hollow Fiber Bioreactor featuring biocompatible fibers that are autoclavable, hydrophilic and uniquely porous (MW 3 million cutoff) for optimized cell culture. The continuous perfusion mode of the Hybrinet Bioreactor facilitates better cell nutrition and constant removal of cell metabolites while minimizing exposure of the target protein to enzymes during the culture. Kinetek Systems, c/o Drone-Mueller, 2222 Schuetz Rd., Suite 222, St. Louis, MO 63146, USA. Telephone 800-222-2995 or 314-569-2095. Circle 75 on Reader Service Card.

**Capillary Electrophoresis Detector.** Energy throughput and on-column detection sensitivity are maximized by the patent-pending optics of this UV detector for capillary electrophoresis. An exclusive dual-aperture cell incorporates a stage with micrometer-type adjustment for precise alignment of capillary column and lightpath. Designed to work with fused silica capillaries up to 500 μm OD and 50 μm or greater ID, the detector features continuously variable wavelength selection from 190–750 nm, rise times selectable down to 0.05 second, LED readout, and outputs for recorder and integrator or data system. Isco, 4700 Superior, Lincoln, NE 68504, USA. Telephone 402-464-0231 or 1-800-228-4250. Circle 58 on Reader Service Card.

**Literature**

Organic acid and alcohol separations, PRPTM-1 (polymeric reverse phase) HPLC columns, and ion chromatography, three free brochures from Hamilton, PO. Box 10030, Reno, NV 89520-0012, USA.

120 enzyme-related firms in the U.S., Canada, S. America, Europe, and Japan, detailed in a pocket guide from BioEngineering News, PO. Box 1210, Port Angeles, WA 98362, USA.

Immunofixation electrophoresis wall chart featuring guidelines for evaluating monoclonal proteins and interpreting IFE patterns, from Helena, PO. Box 752, Beaumont, TX 77704, USA.

Molecular biology, a newsletter describing a rapid, simple technique for extracting DNA from paraffin-embedded archived pathological specimens, from Bio-Rad, 1414 Harbour Way S., Richmond, CA 94804, USA.

Constant temperature equipment, a general catalog of more than 1000 products, includes water baths, environmental chambers, incubators, and ovens, from Lab-Line, Lab-Line Plaza, 15th and Bloomingdale Aves., Melrose Park, IL 60160-1491, USA.

Products in downsized packaging, the new smaller sizes recommended by the American Chemical Society for safety, economy, and convenience, in a catalog from Fisher Scientific, 711 Forbes Ave., Pittsburgh, PA 15219, USA.

A 120-page product catalog for immunology, cell biology, biochemistry, and molecular biology — Janssen Biochimica — from Accurate Chemical, 300 Shames Dr., Westbury, NY 11590, USA.

Peptide synthesizer shown in operation on a 5-minute video and described in a color brochure, and a wall chart of chemistry selections for peptide synthesis — all three from MilliGen/Biosearch, 2980 Kerner Blvd., San Rafael, CA 94901, USA.

Characteristics of polyclonal and monoclonal antibodies in a catalog and data sheets from Cambridge Medical, 575 Middlesex Tpke., Billerica, MA 01865, USA.

Laser cytometer — fluorescence image analysis and adherent cell sorting — in a brochure from Meridian Instruments, 2310 Science Pkwy, Okemos, MI 48864, USA.
The FASEB Journal
Information for Authors*

The FASEB Journal (FJ) is the official publication of the Federation of American Societies for Experimental Biology (FASEB). FJ publishes two types of articles: 1) brief, definitive, and essentially final research communications of fundamental interest that are considered to warrant prompt publication; and 2) state-of-the-art reviews, drawn as far as possible, from the topics of the FASEB symposia.

Manuscripts containing original communications, or proposals for reviews, should be sent to the Editor-in-Chief, Dr. W. J. Whelan, The FASEB Journal, P.O. Box 016129, Miami, FL 33101-6129, USA.

Original Research Communications
FJ devotes a major portion of its pages (outside the meeting abstracts) to the publication of brief, definitive, original, and essentially final research communications that are considered to warrant prompt publication.

The aim of FJ is to illustrate the unity of biology and the interdependence of its constituent disciplines. Therefore, in keeping with this policy, and to qualify for acceptance, an original communication must not only be of outstanding scientific quality but must also be of broad interest. The subject coverage of FJ is illustrated by the following disciplinary areas: biochemistry, biophysics, cell biology, developmental biology, genetics, immunology, neurobiology, nutrition, pathology, pharmacology, and physiology.

Papers should begin with an abstract written for the general readership and be free from jargon. They should continue with an introduction followed by the results and discussion; they should conclude with a succinct bibliography. Methods may be included within the figure legends and tables or as a separate section. Papers may not occupy more than five printed pages (equivalent of 5000 words and inclusive of illustrations and diagrams) and will be returned as unacceptable if they exceed this limitation.

Papers (an original and four copies) should be sent to the Editor-in-Chief. Prompt publication of acceptable papers will be assured by careful conformity to the instructions to contributors and the expeditious return of proofs.

State-of-the-Art Reviews
FJ also presents research reviews. Heretofore these have been in the form of extended reports emanating from symposia or mini-symposia presented at FASEB meetings. To provide such research summaries in a more compact form and thereby to allow, within space limitations, a more comprehensive and representative survey of the acquisition of new biological knowledge, FJ publishes state-of-the-art reviews that emphasize interdisciplinary aspects of the growing points of research.

These reviews will serve as a window on topics addressed at Society-sponsored symposia or plenary lectures. Therefore, review authors are sought from among those engaged in organizing the symposia. At the same time, volunteered reviews are welcomed that embody the principles of timeliness, topicality, and broad interest. A proposal for such a review, not a completed review, should be sent to the Editor-in-Chief, who will advise on its acceptability.

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Style of Manuscript
General Instructions

1) Manuscripts should be typewritten, with double spacing and 1-inch margins, on 8½ × 11 inch bond paper. Computer printouts of manuscripts must be readable; a dot-matrix printer is generally unacceptable. Metric units should be used. An original and four copies, with figures and tables, should be submitted to the Editor-in-Chief. Pages should be arranged and numbered in the following order: title page, footnotes, abstract (of up to 200 words and indexing key words (maximum of five), text, references, figure legends, tables, and illustrations.

2) The title page should show: title of article; author(s); laboratory or institution of origin with city and state or country; complete address for mailing proofs and telephone number for corresponding author; and shortened title (maximum of 50 characters and spaces) for the running foot.

3) The title should be brief (no more than 90 characters, including spaces, punctuation) and informative. Do not use phrases in which more than three words modify another word (use "Renal hemodynamic effects of atrial natriuretic factor" rather than "Atrial natriuretic factor renal hemodynamic effects"). Serial titles, such as "Interferon, IX," are not permitted, except as a footnote.

4) The abstract, a paragraph of no more than 200 words, should be written for the general readership and be free from jargon. It should be self-explanatory and suitable for use by abstracting services without rewriting. It should state the purpose and major findings and conclusions of the study. Citation of references should be avoided; if used, include bibliographic information.

5) Footnotes, double-spaced, should be assembled on one or more separate sheets; they should be numbered consecutively throughout.

6) The text should be readable, clear, and concise. Any corrections should be neat and legible. Standard nomenclature should be used; unfamiliar or new items should be defined at first mention. (See Abbreviations section below.) Foreign words not in general use in the English language should be underlined for italic type; they should not be used if English equivalents have been accepted, e.g., lamellae, not lamellae. Webster's New Collegiate Dictionary (1977) should be followed for spelling, compounding, and word separation.

7) Drugs and trade names. The chemical or generic name should precede the abbreviation of a drug name the first time it appears. Proprietary (trademarked) names should be capitalized and the spelling carefully checked. Trade names of chemicals or equipment should also be capitalized. Authors should supply an acceptable scientific name in every case as an alternative to the trade name. Trade names should not ordinarily be used in titles.

8) Active voice rather than passive voice should be used whenever possible. Present tense is used for references to existing knowledge or accepted concepts, and for proven conclusions from the present work; past tense is used when describing experimental work on which the paper is based.

Abbreviations, Symbols, and Terminology

Each author must include, as a footnote to the first page of text, a list of any new or special abbreviations used in the paper, with the spelled-out form and definition if necessary for clarity. For information on style in general, authors are referred to the CBE Style Manual, 5th ed. (1983), prepared by the CBE Style Manual Committee (Bethesda, Md.). Chemical and biochemical terms and abbreviations should be in accordance with the recommendations for usage by the International Union of Pure and Applied Chemistry (IUPAC), the International Union of Biochemistry (IUB), and their Committee on Nomenclature [see Biochemical Nomen-

The following abbreviations or acronyms may be used without explanation; others should be defined at first use in the text.

- **A**: ampere; blood group; chromosome group
- **Å**: ångström; absorbance; area
- **a**: atto-
- **ac**: acceleration; activity, relative
- **AD**: anno Domini
- **A·h**: ampere-hour
- **AMP, ADP, ATP**: adenosine phosphates
- **AMPase, ADPase, ATPase**: adenosine phosphatases
- **aq**: aqueous
- **atm**: standard atmosphere
- **at. wt**: atomic weight
- **BCG**: bacille Calmette-Guérin
- **bp**: boiling point
- **Bq**: becquerel
- **Br**: British thermal unit
- **C**: coulomb
- **°C**: Celsius
- **c**: centi-
- **ca**: about
- **cal**: calorie
- **cAMP, cGMP, etc.**: cyclic AMP, cyclic GMP, etc.
- **CD**: circular dichroism
- **cd**: candela
- **cDNA**: complementary DNA
- **cf**: compare
- **Ci**: curie
- **cm, cm², cm³**: centimeters
- **CMP, CDP, CTP**: cytidine phosphates
- **Co**: coenzyme A
- **CoA**: acetyl coenzyme A
- **cpm**: counts per minute
- **cps**: counts per second
- **cp**: centipoise
- **c/s**: cycles per second
- **cRNA**: complementary RNA
- **cubic**: use exponent 3
- **°**: degree, angle
- **D**: diffusion, coefficient
- **d**: dextro configuration
- **d**: density
- **d, (+)**: dextrorotatory
- **Da**: dalton
- **da**: deca-
- **dB**: decibel
- **dc**: direct current
- **DDT**: 1,1,1-trichloro-2,2-bis-(p-chlorophenyl)ethane
- **DEAE-cellulose**: O-(diethylaminoethyl)cellulose
- **df**: DNA
- **DNase**: DNA
- **dpm**: disintegrations per minute
- **dTDP, dTDP**: disintegrations per second
- **dyne**: dye
- **electromotive force**: electromotive force; electrode potential; energy
- **emf**: effective concentration, 50%
- **exp**: editor
- **F**: effective dose, 50%
- **f**: ethylenediaminetetraacetic acid
- **fig.**: for example
- **flavin mononucleotides**: ethylene glycol bis(β-aminoethyl ether)N,N,N',N'-tetraacetic acid
- **foot-candle**: electron paramagnetic resonance
- **GMP, GDP, GTP**: electron spin resonance
- **GSH, GSSG**: equivalent
- **GMP, GDP, GTP**: foot-candle
- **H**: figure(s)
- **GMP, GDP, GTP**: freezing point
- **GSH, GSSG**: foot
- **g**: foot-pound
- **GSH, GSSG**: gauss; general; giga-
- **g**: gravitational potential
- **GSH, GSSG**: guanosine phosphates
- **Hz**: greater than
- **GSH, GSSG**: glutathiones
- **i.d.**: Henry
- **ID₅₀**: hecto-; hour
- **IC₅₀**: hemoglobin
- **ID₇₀**: heterogeneous nuclear RNA
- **IMP, IDP, ITP**: horse power
- **GSH, GSSG**: height
- **Hz**: hertz
- **GSH, GSSG**: inhibitory concentration, 50%
- **IC₅₀**: infective dose, 50%
- **IG**: inside diameter
- **IC₇₀**: that is
- **IG**: immunoglobulin
- **IMP, IDP, ITP**: intramuscular
- **IG**: inosine phosphates
- **IMP, IDP, ITP**: inch
- **IG**: intraperitoneal
- **IMP, IDP, ITP**: infrared
- **IG**: international unit
- **IMP, IDP, ITP**: intravenous
- **J**: joule
- **Jr.**: junior, with names
- **K**: kelvin
- **K**: Michaelis constant
- **k**: kilo-
- **kcal**: kilocalorie
- **kg**: kilogram
- **km**: kilometer
- **L**: lever configuration
- **L**: leverotatory
- **lb**: pound
- **lb**: pounds per square inch
- **LB₅₀**: lethal concentration, 50%
- **LB₅₀**: lethal dose, 50%
< less than
ln natural log
log logarithm
lx lux
M mega-
M_r relative molecular mass
M_r molar (moles/liter)
m meter; milli-
m meta-, in chemical name
m^2, m^3 square and cubic meters
mA millampere
max maximum
meq millequivalent
mg milligram
mi mile
min minute
mi/h miles per hour
ml milliliter
ml/min milliliters per minute
mm, mm^2, mm^3 millimeters
mm Hg millimeters of mercury
mol mole
mol wt molecular weight
mosmol milliosmole
mp melting point
m/s meters per second
mRNA messenger RNA
ms millisecond
mtDNA mitochondrial DNA
mtRNA mitochondrial RNA
m micro-
meq microequivalent
mg microgram
ml milliliter
mm micrometer
mmol micromole
MW*h megawatt-hour
*500 magnification
N newton
N normal (concentration); number (statistics)
n nano-; neutron
n number (statistics); normal (chemical name)
nA nanoampere
NAD, NAD+, NAP, NADP, NADPH nicotinamide adenine dinucleotides and phosphates
nDNA nuclear DNA
nRNA nuclear RNA
nm nanometer
NMN nicotinamide mononucleotide
NMR nuclear magnetic resonance
no number
N/m^2 newton per square meter
Ω ohm
α ortho-, in chemical name
o,d. outside diameter
osmol osmole
oz ounce
P peta-; poise; pressure
P phosphate other than inorganic;
probability
P_i inorganic phosphate
p pico-
p, para-, in chemical name
Pa pascal
% percent
%e per mille
pH negative log of hydrogen ion
PQ concentration
pK negative log of dissociation constant
PM after noon
pm picometer
PP_i inorganic pyrophosphate
ppb parts per billion
ppm parts per million
Q_o increase in rate of chemical reaction for
each 10°C increase in temperature
R roentgen
r_0 configuration; gas constant; resistance
r correlation coefficient
rad radian; radiation
ref reference
Rh ribonucleic acid
RNase ribonuclease
rpm revolutions per minute
rps revolutions per second
rRNA ribosomal RNA
s siemens, Svedberg unit
S configuration
s second
s symmetry, in chemical name
s.c. subcutaneous
SD standard deviation
SE standard error
sec secondary, in chemical name
SEM standard error of the mean
sp, spp. specific gravity
sp gr square use exponent 2
square
STP standard temperature and pressure
Sw sievert (replaces rem)
T tera-; tesla
T tert
t tertiary, in chemical name
TMP, TDP, TTP ribosylthymine phosphates
Tris tris(hydroxymethyl)aminomethane
tRNA transfer RNA
U uniformly labeled; unit
uhf ultrahigh frequency
UMP, UDP, UTP uridine phosphates
UV ultraviolet
V volt
V volume
vol/vol volume ratio
vs. versus
W watt
Wb weber
W h watt hour
wk week
wt weight
wt/vol weight per volume
wt/wt weight ratio
x mean
XMP, XDP, XTP xanthosine phosphates
yd yard
yr year

Note: standard three-letter or single-letter abbreviations for amino acids may be used in sequences and in tables and figures.

References

References should be cited in the text in numerical order, with the numeral placed parentheses. References should be typed separately with inclusive pages and titles, double-spaced, with one reference per number. Authors are responsible for the accuracy and completeness of their references; they will not be checked in the Editorial Office.

Citations to unpublished work should not be entered in the list of references unless the paper has been accepted for publication. Include them in the text as "(unpublished observations)" or "(personal communications)," with authors' initials and surnames.

For titles of journals, follow the abbreviations listed in Serial Sources for the BIOSIS Data Base. The form of references to periodicals should be in accordance with the following example. (Titles and inclusive pages must be used.)

Book references should include information in the following order: author(s), year of publication, title, pages, publisher, and city of publication. The title of the book should be underlined for italic type. When one chapter is cited its title and page numbers should be included, and the book's authors or editors should be named.


Illustrations

Illustrations should be identified lightly with pencil on the reverse side with the figure number and author name(s); when necessary, the title should be clearly marked. They should be referred to as figures in the text, and should be numbered with Arabic numerals; each should have a legend.

When preparing figures, particularly graphs, authors might follow the suggestions of H. G. Hers (*Nature* 307: 205, 1984). They are included in the following:

1) Illustrations should be sharp, contrasty, unmounted photographs on glossy paper. Photographs should be the width of one column (3½ inches) or two columns (7½ inches). All drawings for reduction to a given size should be drawn and lettered to the same scale.

2) Lettering should be in black ink and must be legible after reduction (i.e., at least 1.5 mm high). The smallest elements (subscripts or superscripts) should be readable when reduced. Typewritten or computer-generated lettering is not preferred.

3) Graphs such as electrocardiograms, kymograms, and oscillograms should be prepared so that the dark cross-hatched background is eliminated, the faint portions of the graphs are intensified, and sharp prints are obtained. To avoid this processing, use blue-rulled instead of black-rulled recording paper for the original records.

4) A figure containing several panels with the same axes, usually denoted a, b, etc. authors should indicate on each panel its experimental specificity and should label axes as precisely as possible: e.g., 'Time after drug additions rather than 'Time'. Also, express results in mol rather than ppm or absorbance units. If results are given in percent, define 100% in standard units in the legend.

5) When possible, all lettering should be within the framework of the illustration; likewise the key to symbols should be on the face of the chart. Use one symbol for the same experimental conditions in all comparable figures in the article. When the figure is so filled that it is necessary to explain symbols in the legend, only these standard characters should be used: □ ■ ● ◆ ▲ △ ▽ ▼ ▲ △ ▽ ▼ x.

6) Actual magnification of all photomicrographs should be given. All photomicrographs should be labeled. The Editorial Office will make corrections for reduction. An appropriate scale on the photomicrograph itself is, however, preferable and more accurate.

7) Arrangements must be made well in advance with the Editorial Office for the reproduction of any illustrations in color. Authors must have funds available to meet the full cost of color plates and their printing.

8) *FJ* reproduces figures and charts in the smallest size consistent with readability and purpose of the illustration. However, authors may make recommendations for reduction or enlargement.

9) If illustrations that have been published elsewhere in a tabular data should be omitted. Short or abbreviated column heads should be used. Statistical measures of variation, P, SD, SE, etc., should be identified as such.

The approximate position of each table should be indicated in the margin of the text.

Formulas and Equations

Structural chemical formulas, process flow diagrams, and complicated mathematical expressions should be precisely and carefully labeled, but they should be kept to a minimum because in typesetting they are composed by hand and are expensive. Glossy prints of complicated formulas and expressions suitable as line drawings are preferred. All subscripts, superscripts, Greek letters, and unusual characters must be clearly identified.

Acknowledgments

It is customary to acknowledge only persons who have made substantive contributions to the studies reported in the manuscript. Authors should obtain written permission for everyone acknowledged by name (including references to unpublished work) because readers may infer their endorsement of the paper and its conclusions. If appropriate, a statement of grant support may be included. Names of grant sources should not be abbreviated.

Experimental Procedures

This journal endorses the principles embodied in the Declaration of Helsinki and expects that all investigations involving humans will have been conducted in conformity with these principles. It is expected that the "Guiding Principles in the Care and Use of Animals" will have been observed in all animal experimentation reported in *FJ*.

Auxiliary Publication

Additional detailed tables, appendices, descriptions of materials and methods, mathematical derivations, extra figures, and other supplementary matter too costly to be included in the journal article may be submitted for deposition without charge to the author with the American Society for Information Science (ASIS), National Auxiliary Publications Service. Material is deposited by the Editorial Office with the consent of the author, and a footnote is carried in the published article to the effect that photocopies or microfiche copies are available at moderate cost.

Author Charges

Authors of original research communications are allowed the equivalent of one full page of tables, figures, and halftones, or a half page of chemical and mathematical formulas and equations. Authors may be charged for material exceeding this allowance. When excess charges are anticipated, authors should make the necessary arrangements at the time a manuscript is submitted (i.e., initiation of an institutional purchase order, obligation of funds under a grant, etc.).

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No page charges are made for any material appearing in *FJ*.

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Two sets of page proofs together with the original manuscript are sent to the author. Proofs should be carefully checked without delay and any necessary changes or printer's errors (to be marked in red) should be clearly indicated in the margins. Except for correction of typographic errors, the cost of authors' alterations of subject matter in type will be charged to authors if these charges exceed the journal's allowance. Proofs and the original manuscript should be returned within 48 hours to the Editorial Office, *The FASEB Journal*, 9650 Rockville Pike, Bethesda, MD 20814, USA.

Reprints

Each author receives with the proofs a reprint order form that must be completed and returned with the proofs to the Editorial Office if reprints are desired. Orders submitted after the journal is printed are subject to considerably increased prices.
POSITIONS AVAILABLE

Classified advertisement: $25.00 per line (70 characters), $200.00 (8 line) minimum. Display advertisement: $600.00 for 1/4 page, 3 1/4 inches x 4 1/2 inches; $900.00 for 1/2 page, 3 1/4 inches x 9 9/16 inches (vertical) or 7/8 inches x 4 3/8 inches (horizontal); $1200.00 for full page, 7 1/4 inches x 9 9/16 inches. (For display ads, add 5% if mechanical not submitted.) Advertisements will be published in next available issue unless otherwise specified. Deadline for receipt of copy is 5th day of month before publication. Payment or purchase order is required with insertion copy. Advertisements are noncommissionable to agents; no cash discounts are allowed. Blind advertisements are not accepted.

POSITIONS DESIRED—Candidates registered with FASEB Placement Service are allowed one advertisement of five lines, each containing 70 characters including spaces. The issue in which advertisement appears will be based on date of receipt of copy. Fee for publication in additional issues: $10.00 per issue.

Primary employers desiring identification and additional details concerning Positions Desired advertisers should write to address below, indicating hyphenated number appearing as last element of advertisement; a one-page application from advertiser(s) will be provided immediately. Advance telephonic determination of availability of advertisers from earlier-than-current issues is recommended. Employers not currently registered with Placement Service for annual meeting participation are charged a minimum fee of $30.00 for identification of up to 10 advertisers, plus $3.00 for each above 10, payable in advance to FASEB Placement Service.

Some registered candidates do not prepare Positions Desired advertisements; some advertisements are published at times not coinciding with employer recruitment activities. Primary employers not finding advertisements that appear to match current or projected needs are invited to request a search of all active candidate files. Telephone a description of the desired qualifications; results of search will be discussed telephonically with requesting official, and applications from candidates declared suitable will be forwarded. Employers not currently registered with Placement Service for annual meeting participation are charged a minimum fee of $30.00 for up to 10 applications, plus $3.00 for each above 10.

In publishing these advertisements FASEB assumes no obligations as to qualifications of prospective employees or responsibility of employers, nor shall FASEB obtain further information concerning positions advertised or those seeking employment. Accuracy and completeness of all listings are the responsibility of the submitting party.

Various U.S. national and state laws against discrimination, including the Federal Civil Rights Act of 1964, prohibit discrimination in employment in the United States because of race, color, religion, national origin, age, sex, or any reason not based on a bona fide occupational qualification. The Federation of American Societies for Experimental Biology endorses these principles and reserves the right to edit all copy and to refuse advertisements not in consonance therewith.

Employment in countries other than the United States may be restricted by government visa and other policies. Moreover, it is suggested that the generally accepted employment practices, the cultural conditions, and the exact provisions of the specific positions being considered be investigated thoroughly. The U.S. Embassies in countries of interest to potential employees should be able to provide up-to-date data concerning internal conditions.

For a description of operation at annual meetings, please refer to the January or February issue or contact the Placement Service. Address all correspondence to FASEB Placement Service, 9650 Rockville Pike, Bethesda, MD 20814. (301) 530-7020

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POSITIONS AVAILABLE

FACULTY POSITION IN HUMAN NUTRITION. The Division of Nutritional Sciences, New York State Colleges of Human Ecology and Agriculture and Life Sciences at Cornell University invites applications for a faculty position (rank open) in human nutrition. This is a 12-month, tenure-track appointment that begins as soon as possible. The successful applicant is expected to teach at the undergraduate and graduate levels and to maintain a strong research program based on the use of isotopic tracers that is suitable for training graduate students in human nutrition. In addition, s/he is expected to oversee the Division's new mass spectrometry facility. Candidates should have a doctoral degree, postdoctoral experience and the potential for outstanding accomplishments in research and teaching. Experience in mass spectrometry and the application of stable isotopes to research in human subjects is desirable. Send CV, list of publications, brief statement of research and teaching interests and three letters of reference to Dr. K. M. Rasmussen, Division of Nutritional Sciences, 111 Savage Hall, Cornell University, Ithaca, NY 14853-6301. Consideration of applications will begin on May 1, 1989. Cornell University is an affirmative action/equal opportunity employer.

POSTDOCTORAL POSITION. Research in vascular cell biology, principally in vitro, with major interest in vascular cell interactions both among the cellular elements themselves and extracellular matrix molecules. Expertise in all aspects of cell culture and basic techniques of cell biology required. Position available immediately, funded for minimum of two years. Salary range $22,000 to $25,000. Reply with CV and references to Richard P. Cambria, M.D., Massachusetts General Hospital, 15 Parkman Street, Boston, MA 02114.

POSTDOCTORAL POSITIONS available immediately to study cell and molecular biology of bacterial toxin action and replication of animal viruses, as models for receptor mediated endocytosis, biosynthesis and processing of proteins, and regulation of gene expression. Applicants with a background in molecular cell biology, biochemistry or virology and experience with hybridoma production, recombinant DNA technology, or protein chemistry of receptors and enzymes will be considered. Send CV and names of three references to Dr. Thomas Moehring, Department of Microbiology, University of Vermont, College of Agriculture and Life Sciences, and College of Medicine, Burlington, VT 05405. Equal opportunity/affirmative action employer.
**JPL/NASA VISITING SENIOR SCIENTIST**

Space Biomedical Research

The Jet Propulsion Laboratory invites applications to the Visiting Senior Scientist Program in the area of Space Biomedical Research. The position requires a Ph.D. or equivalent degree along with research experience and a record of research publications. Although any qualified person may apply, tenured faculty members with experience in NASA’s Biomedical Research Program are the preferred choice. Responsibilities include aiding in the planning and implementation of the Biomedical Research Program within the Life Sciences Division at NASA Headquarters. Duties include extensive contacts with the research community, conducting peer reviews of research proposals, recommending selection of investigations as well as assisting in the maintenance of a balanced and productive program within budgetary resources. The appointee is expected to work closely with managers at several NASA centers and to advise potential investigators from the university community how their plans relate to the NASA Biomedical Program. Frequent travel and residence near NASA Headquarters (in the Washington, DC area) will be required. Appointees must be U.S. citizens or permanent residents and are expected to return to their home institution following their NASA assignment. Please provide CV, bibliography and the names of four references to:

Dr. Harry Ashkenas, 180-900 Dept. V6
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109
(818) 354-8251

An equal opportunity employer M/F

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**ASSOCIATE DEAN**

RESEARCH AND ADVANCED STUDIES

The School of Veterinary Medicine at Louisiana State University and A&M College invites nominations and applications for the position of Associate Dean for Research and Advanced Studies. Qualifications for the position include the D.V.M. or equivalent and/or Ph.D. and extensive research experience with notable accomplishments. Applicants must have achievements in attracting extramural funding for research and in sustaining viable research programs. Experience in advanced education, the guidance of graduate students and a record of successful cooperative research endeavors are important characteristics. The desired candidate has demonstrated leadership abilities, is expected to satisfy professional rank and tenure requirements suitable for academic faculty appointment and is eligible for membership on the graduate faculty. The salary is commensurate with qualifications and experience. Applications will be accepted through May 16, or until the position, which becomes available July 1, 1989, is filled. Send application with CV as well as names, addresses and phone numbers of four referees to:

Dr. J. Storz, Search Committee Chairman
Department of Veterinary Microbiology and Parasitology
School of Veterinary Medicine
Louisiana State University
Baton Rouge, LA 70803
(504) 346-3312

LSU is an equal opportunity and affirmative action employer.

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**DEPUTY DIRECTOR, OFFICE OF HEALTH & ENVIRONMENTAL ASSESSMENT (OHEA)**

**DIRECTOR, HUMAN HEALTH ASSESSMENT GROUP (HHAG)**

The U.S. Environmental Protection Agency (EPA) is seeking highly qualified candidates for two Senior Executive Service (SES) positions located at EPA Headquarters in Washington, DC.

The OHEA oversees an Exposure Assessment Group and HHAG at Headquarters, Environmental Criteria Assessment Offices at Cincinnati, Ohio, and Research Triangle Park, North Carolina. OHEA is responsible for the technical direction and management of programs for assessing effects of environmental pollutants on human health and ecological systems, i.e., performing hazard assessments, developing risk assessment methods and guidelines, providing other forms of scientific advice to Agency regulatory offices and planning/implementing research aimed at reducing uncertainty in risk assessment.

The Director, HHAG oversees four branches with emphasis on toxicology, epidemiology, biostatistics, mechanisms of toxic action. HHAG provides the Agency with health hazard risk information for use in regulatory decision making with recommendations being defensible at national/international levels.

Applicants must have a bachelor's or higher degree in life or health sciences or a related field relating to the work of the positions and professional experience demonstrating leadership and technical competence in one of those fields. Notable experience in human health risk assessment or in public health protection is desirable. Must meet the technical/executive qualifications described in Vacancy Announcement. For a copy of the Vacancy Announcement call or write: Edna Morse, Environmental Protection Agency, Executive Resources and Special Programs Division, PM-224, 401 M Street, SW, Washington, DC 20460 (202) 382-3328.

Applications must be postmarked by June 1, 1989. A separate SF-171, Application for Federal Employment, MUST be submitted for EACH position.

EPA is an equal employment opportunity employer.
POSTDOCTORAL RESEARCH ASSOCIATES (3 anticipated) are being recruited to join an NIH-funded multidisciplinary research program on persistent lentivirus infections using the simian immunodeficiency virus and equine infectious anemia virus systems. The program is designed to examine the mechanisms of lentivirus persistence, to characterize the nature of host immune responses to and evaluate vaccine strategies. Positions are available to study the molecular biology of virus gene expression and regulation, to produce and characterize viral antigens using synthetic peptides and recombinant expression systems and to characterize immune responses in infected or vaccinated animals. Candidates should have a Ph.D. in biochemistry, microbiology or molecular biology and demonstrated expertise and experience in the research area of interest. Applicants should send three letters of reference to Dr. Gary J. Hausman, Department of Foods and Nutrition, University of Georgia, Athens, GA 30602 (404) 546-3224. The University of Georgia is an equal opportunity/affirmative action institution.

POSTDOCTORAL FELLOW(S) OR RESEARCH SCIENTIST(S). Animal Retrovirus Research Laboratory, Colorado State University. One to two Ph.D. scientists with expertise in modern virology and/or immunology are sought to participate in research into the mechanisms, pathogenesis and innovative therapies of retrovirus infection and associated immunodeficiency syndrome and bone marrow failure in animals. Model systems under study will include the feline and simian lentiviruses and the feline leukemia viruses. Salary commensurate with credentials. Deadline: June 1, 1989. Please send application materials to Dr. Edward A. Hoover, Professor, Department of Pathology, Colorado State University, Fort Collins, CO 80523 (303-491-7861). Colorado State University is an equal opportunity/affirmative action employer and complies with all federal and Colorado state laws, regulations and executive orders regarding affirmative action requirements.

JUNIOR FACULTY position available in the pharmacology and biochemistry of antineoplastic agents targeted against specific human cancer types. Studies will involve the modulation of antancer agents with thymidylate synthase as the primary target. The focus will be on metabolism of reduced folates, modulation of reduced folate pools and optimization of drug scheduling for therapeutic gain. Research will also identify factors that influence the regulation and turnover of thymidylate synthase in elucidating the importance of the enzyme as a therapeutic target. Candidates should have Ph.D. with a minimum of three years postdoctoral experience. A strong background in biochemistry is advantageous. Send CV and names of three references to Dr. J. A. Houghton, Laboratories for Developmental Therapeutics, Department of Pharmacology, St. Jude Children's Research Hospital, 332 N Lauderdale, Memphis, TN 38101. Equal opportunity/affirmative action employer.

VIROLOGIST with postdoctoral experience and an interest in antiviral research is being sought to play a major role in two recently-funded grants. The candidate will explore the active components of natural products found to be effective in vivo for their effect on the replication cycle and pathogenesis of hepatitis and retroviruses. The successful candidate should have a sound knowledge of molecular biology, tissue culture techniques and animal models. In addition, this individual will supervise the implementation of assays detecting hepatitis B markers as well as markers of hepatocellular carcinoma. Although this position is nontenure track, the candidate in time will be encouraged to seek independent funding to pursue related research, which could lead to a tenure-track position. Salary will be commensurate with qualifications. Please send CV and letters of reference to Search Committee for Virologist, Personnel Department, Fox Chase Cancer Center, 7701 Burholme Avenue, Philadelphia, PA 19111. The Center is an equal opportunity employer.

POSTDOCTORAL/RESEARCH ASSOCIATE POSITIONS (2) are available to study various aspects of amino acid, nucleic acid and mineral metabolism in health and malnutrition. Ph.D. in nutrition/biochemistry or related field and familiarity with HPLC and other instruments. Meharry Medical College has strong, interactive research programs in molecular and cellular biology and the research focus of the Center for Nutrition is on nutritional problems prevalent in underprivileged minority populations. Salary is negotiable. Send CV, list of publications and names of three references to Director, Center for Nutrition, Box A 73, Meharry Medical College, Nashville, TN 37208. Equal opportunity/affirmative action employer.

POSTDOCTORAL POSITION available immediately for work in the area of in utero regulation of adipose tissue development using the fetal pig as a model system. Specific areas of study may include endocrinology of preadipocyte development in vivo and in vitro and isolation and identification of adipogenic factors from the porcine pituitary. Experience in related areas preferred. Send CV, letter of application and three letters of reference to Dr. Gary J. Hausman, Department of Foods and Nutrition, University of Georgia, Athens, GA 30602 (404) 546-3224. The University of Georgia is an equal opportunity/affirmative action institution.

RESEARCH FELLOWSHIP IN CELLULAR AND MOLECULAR DERMATOLOGY. The Department of Dermatology at the University of Rochester School of Medicine and Dentistry offers a postdoctoral program for those with M.D. or Ph.D. degree contemplating an academic career in dermatology research. Special expertise and interests of our research program include the development of the skin, regulation of epidermal proliferation and differentiation, growth factors, the cloning of genes for structural and regulatory proteins, the formation of basement membrane and the use of flow cytometry to study epithelial cell metabolism. This program is funded by a NIH training grant and candidates must meet the citizenship requirements for a National Service Research Fellowship. For more information, send CV and an outline of career plans to Lowell A. Goldsmith, M.D., Professor and Chair, Department of Dermatology, University of Rochester, 601 Elmwood Avenue, P.O. Box 697, Rochester, NY 14642. The University of Rochester is an affirmative action/equal opportunity employer.

PEDiatric Pathologist. CHMC seeks an experienced pediatric pathologist at the assistant professor level. Board certification in anatomic pathology and formal training in pediatric pathology is required. Practical experience in pediatric pathology is highly desired. The main emphasis of the position will be research in areas of molecular biology and in the application of molecular biology to clinical problems. It is expected that the individual will have skills in situ hybridization, Southern and Northern blot analysis and have familiarity with cloning techniques for the purpose of developing a molecular diagnostic laboratory. Send resume to A. James McAdams, M.D., Director, Department of Pathology, Children's Hospital Medical Center, Elland & Bethesda Avenue, Cincinnati, OH 45229-2899.

ASSISTANT PROFESSORS. The Department of Biochemistry invites applications for two tenure-track positions. There is a developing Molecular Structure-Function Facility within the department that has openings for an analytical, physical or protein biochemist and a molecular biologist. Applicants should have at least two years of postdoctoral experience and be able to establish an independent extramurally funded research program. The successful candidate will participate in the teaching activities of the department, which include team teaching of the general biochemistry courses and participation in one graduate course during the year. Interested applicants should send CV, brief description of research and names of three referees by June 1, 1989 to Dr. Mary L. Swift, Chairperson of the Search Committee, Department of Biochemistry, College of Medicine, Howard University, Washington, DC 20059. Applications will be accepted until the positions are filled. Howard University is an equal opportunity employer. M/F/H.

POSITIONS DESIRED

Ph.D., 1985; Pharmacology, toxicology, physiology, biochemistry, molecular biology; Gene expression, drug metabolism/excretion, enzymology, pulmonary and hepatic pharmacology/toxicology studied in vivo/in vitro and in tissue culture; Avail. fall 1989; Research position desired. 3-9166

Ph.D., 1984; Immunology, molecular biology; Virally induced in vitro transformations, lymphocyte cloning, Ag specific TCL, tumor lines, extensive FACS, ELISA, monoclonal production, DNA, RNA, plasmid preparations, Northern & Southern analysis; Staff position in research/teaching. 6-9205
Ph.D., 1985; Renal physiology, cellular and comparative physiology; Renal epithelial cell culture and ion transport, oxidative and glycolytic metabolism; Avail. June 1989; Research/teaching position in academia or industry; Salary negot. 1-9353

Ph.D., 1989 (expected); Biochemistry, clinical chemistry; Experience in enzymology/protein chemistry, large-scale purification and characterization, wide variety of clinical chemistry techniques; Avail. July 1989; Staff or postdoc. position in academia or industry; Salary negot. 2-9354

Ph.D., 1982; Biochemistry, physiology, cell biology; Experience in protein purification and characterization, background in tissue culture, coagulation, thrombosis, fibrinolysis, interactions between coagulation factors, fibrinogen, platelet and endothelial cells; Staff position in academia or industry; Salary negot. 2-9355

Ph.D., 1989 (expected); Immunology, antiviral immune responses, lymphokine expression; Lymphokine bioassays, CTL assay, lymphocyte proliferation assay, RIA for neuropeptides, ELISA for virus-specific immunoglobulins, gel exclusion chromatography, tissue culture; Avail. fall 1989; Postdoc. position in academia; Salary negot. 6-9356

Ph.D., 1989 (expected); Pathology, cell biology, molecular biology; Primary culture of endothelial and smooth muscle cells, enzyme assays; SDS gel electrophoresis, sub-cellular fractionation, RNA and DNA isolation, blot analysis; Avail. November 1989; Postdoc. position; Salary negot. 7-9357

Ph.D., 1975; Nutrition, biochemistry, physiology; Risk and health assessments, nutrient deficiency, toxicity, and requirement, clinical biochemistry, human and animal studies, method development, laboratory instruments, management of personnel and budget; Avail. May 1989; Research position in academia or industry; Salary negot. 5-9359

Ph.D., 1989 (expected); Nutrition; R.D.; Soluble fibers, postprandial lipemia, lipoproteins and apolipoprotein mRNA, clinical and animal studies, Northern blot, slot blot, electrophoresis, immunoprecipitation, TLC, nutrition consultant; Teaching, government, industry; Salary negot. 5-9360

Ph.D., 1986; Biochemistry; Whole body energy expenditure, human metabolism & nutrition, measurement of energy expenditure by indirect calorimetry and doubly labeled water, use of stable isotopes for metabolic studies, analysis of samples by isotope ratio mass spectrometry; Avail. summer 1989; Staff position. 5-9361

Ph.D., 1962; Physiology, nutrition; Gut transport, role of flora, nude mice, tumor growth, hemorrhagic shock, animal surgery, grantmanship, cell culture, IBM PC, gnotobiotic techniques, medical center teaching all levels, radioisotopes, editor; Avail. March 1990; R&D director academic/industry/government; Salary negot. 1-9362

Ph.D., 1981; Clinical chemistry; Radioimmunossay development, peptide receptor assay development, hormone and receptor purification, affinity chromatography, primary endocrine cell culture, subcellular fractionation; Avail. July 1989; Academia or industry R&D; Salary $40K +. 2-9363

Ph.D., 1978; Biochemistry, molecular biology; Cloning, sequencing, protein purification and characterization, regulation of metabolism, antibody techniques, superoxide dismutase oxidant injury; Avail. immediately; Research staff position in industry; Salary negot. 2-9364

Ph.D., 1989 (expected); Biochemistry, cell biology; Growth factors, partial characterization of a megakaryocyte cell line, protein purification, cell culture, antibody techniques (ELISA, Western), RNA extraction and Northern; Postdoc. position in basic research. 2-9365

Ph.D., 1986; Biochemistry, immunology; Experience in tissue culture, T and B lymphocyte techniques, monoclonal antibody production, purification and characterization, RIA, ELISA, FACS, in vitro functional assays, PAGE; Avail. September 1989; Postdoc. position in academia or industry; Salary negot. 2-9366

Ph.D., 1987; Nutritional biochemistry; Nutrient bioavailability, gender/diet/feeding effects on lipogenesis and lipoproteins, lipid and lipoprotein separation/quantification, cell culture, HPLC, GC, enzymology, microbiologic assay, clinical chemistry, mammals, avian and fish; R.D. by intern; Research and/or teaching; Salary negot. 5-9367

Ph.D., 1984; Virology, cell biology; Virus-cell interaction, virus receptor identification & characterization, receptor-cytoskeleton association, receptor-mediated endocytosis & transcytosis, tissue culture, hybridoma, SEM/TEM, lecturing experience; Research and/or teaching position in industry or academia; Salary negot. 7-9368

Ph.D., 1986; Cell biology, biochemistry, protein purification, endocrinology; Characterization of mechanisms involved in targeting of proteins to intracellular organelles, specifically to lysosomes and dense-core secretory granules, isolation of targeting receptors; Avail. summer 1989; Assistant professor; Salary negot. 7-9369

Ph.D., 1986; Metabolic physiology, cardiovascular physiology; Experience in whole-body in vivo assessment of metabolism using hepatic vein cathe- terization technique, radioisotope tracer methodology, RIA hyperinsulinemic-euglycemic clamps, contractility index Ees; Avail. September 1989; Assistant professor level in academia/industry; Salary negot. 1-9370

Ph.D., 1983; Pharmacy, tumor biology; Pharmacology, in vivo and in vitro experimentation of antineoplastic drug conjugates and immunoconjugates, pharmacokinetics, metabolism, radioisotopes, HPLC, monoclonal antibody production, characterization, modification, ELISA, Western blotting; Staff position academia or industry; Salary negot. 3-9371

Ph.D., 1984; Immunology, immunogenetics, biophysics and protein chemistry; Membrane protein purification and characterization, reconstituted membranes, fluorescence spectroscopy, HPLC, tissue culture, lymphocyte cloning, in vitro and in vivo assays; Avail. immediately; Research or academic position in MD or DC; Salary negot. 6-9373

Ph.D., 1985; Renal physiology; Neural and hormonal regulation of renal hemodynamics and excretory function in vivo, Na/H antiporter activity in isolated proximal tubules, adrenergic vasoconstriction and aging, HPLC and RIA techniques; Avail. immediately; Staff or postdoc. position in academia or industry; Salary negot. 1-9375

Ph.D., 1986; Chemistry; Protein purification & characterization, structure/function, receptor/enzyme/hormone binding assays, molecular biology and recombinant DNA, DNA-protein interactions, HPLC, radioisotopes, research and teaching experience; Avail. summer 1989; Research position academia/industry. 2-9376

Ph.D., 1989 (expected); Physiology; BS/MS bioengineering; Autonomic nervous system and cardiovascular control, data acquisition/analysis, experience with ECG, evoked potential, and spectral analyses, computer programming expertise; Avail. August 1989; Staff position in academia, industry, or government; Salary negot. 1-9378

Ph.D., 1989 (expected); Physiology, cell physiology; Experience in isolated coronary and carotid artery metabolism as related to ion transport and contraction, oxygen electrode studies, AA spectroscopy, isotachophoresis, small animal surgery, enzyme assays; Postdoc. position in academia/industry; Salary negot. 1-9379

Ph.D., 1989 (expected); Physiology, cardiac physiology, smooth muscle physiology; Experience in myocardial ischemia, enzyme analysis, vascular smooth muscle contractions; Avail. June 1989; Clinical staff position in industry; Salary negot. 1-9382

Ph.D., 1989 (expected); Physiology, cardiovascular physiology; Cardiac dynamics, hemodynamics, hypertension research, sympathetic nervous system effects on cardiovascular dynamics; Avail. spring 1990; Postdoc. position in academia or industry; Salary negot. 1-9383

Ph.D., 1979; Physiology, pharmacology, biochemistry; M.D., 1984; Experience in aerospace and diving medical physiology, NASA, USAF, NOAA, completed advanced DOD management courses, experience with occupationally oriented operational research, physiological and biochemical techniques; Staff academia/industry/government; Salary negot. 1-9384

Ph.D., 1989 (expected); Clinical chemistry, pharmacology/toxicology; Experience in drug analysis, chromatographic techniques, lipoprotein metabolism and analysis, ultracentrifugal analysis; Avail. fall 1989; Staff position in industry; Salary negot. 2-9387

Ph.D., 1972; Biochemistry, immunology, endocrinology; Experience in isolation & purification, regulation of cell components, tissue culture, immunoassay development, electrophoration, hormone action & toxicology, seven years experience teaching; Avail. immediately; R&D academia or industry preferred; Salary negot. 2-9389
Ph.D., 1989 (expected); Pharmacology, cell and molecular biology; Experience in analysis of growth factor production, oncogenic transfection of mammalian cells, liver cell culture, Northern/Southern blotting, immunoblotting; Avail. winter 1989/1990; Postdoc. position in academia or industry; Salary negot. 3-9392

Ph.D., 1989; Pharmacology, toxicology; Autonomic/cardiovascular pharmacology and physiology; shock (hemorrhage and endotoxin), free radicals, mediators, electron paramagnetic resonance, radioenzymatic assay development, radioimmunoassays, protein purification; Avail. June 1989; Staff position in industry; Salary negot. 3-9393

Ph.D., 1989 (expected); Neuropharmacology, immunopharmacology, opioid and analgesic pharmacology; Experience in tissue culture, radioimmunoassay, characterization of membrane receptors neuropeptide radiolabeling, in vitro and in vivo bioassays; Avail. January 1990; Postdoc. position in academia or industry; Salary negot. 3-9394

Ph.D., 1986; Molecular neurobiology and cerebrovascular pharmacology; Specialized in vascular head pain, vasospasm, cerebral blood flow; Staff/management in academia or industry; Salary negot. 3-9396

Ph.D., 1980; Pharmacology, psychopharmacology, behavioral neuroscience; Opioid and non-opioid analgesics, tolerance and dependence, evaluation of CNS stimulants and depressants, behavioral neurotoxicity, gut motility, effects on pupil and temperature; Staff position in industry; Salary negot. 3-9397

Ph.D., 1987; Toxicology, pharmacology; Drug metabolism, toxicological mechanisms, cancer biochemistry, enzymology/protein chemistry, analytical & organic chemical techniques, tissue culture, pharmacokinetics, three years postdoctoral & teaching experience; Avail. April 1990; Research position in academia or industry; Salary negot. 3-9398

Ph.D., 1989 (expected); Cardiovascular pharmacology & biochemistry; Various in vivo, ex vivo vascular smooth muscle preparations, membrane receptor characterization, arachidonic acid metabolism, second messenger systems; Avail. January 1990; Postdoc. position in academia; Salary negot. 3-9399

Ph.D., 1989 (expected); Pharmacology, immunology, biochemistry (antigen processing and presentation); Experience in protein and glycoprotein chemistry, antibody production, immunobioassay development, tissue culture, computer use, animal handling; Avail. spring/summer 1989; Postdoc. position in industry or academia, or entry level position in industry. 3-9401

Ph.D., 1987; Two years postdoctoral; Nutritional biochemistry/animal nutrition relating to trace element absorption and utilization; Protein purification and characterization, HPLC, electrophoresis, solid phase protein assay, radioisotope techniques, tissue culture; Avail. January 1990; Research/teaching academia/industry; Salary negot. 5-9403

Ph.D., 1989 (expected); Nutrition, biochemistry, endocrinology; Energy metabolism, brown adipose tissue thermogenesis, insulin, glucocorticoids, thyroid hormone effects, sympathetic nervous system activity, quantification of catecholamines; Avail. summer 1989; Postdoc. position in academia or industry; Salary negot. 5-9404

M.S., 1989 (expected); Nutrition and immunology; Cytotoxicity assay, isolation of peritoneal macrophages and spleen NK cells, RIA, RID, immunofluorescence, flow cytometry, mineral analysis, tissue culture; Avail. July 1989; Nutrition research or food industry public relations; Salary negot.; Midwest or Southwest. 5-9405

Ph.D., 1989 (expected); Biochemistry, cell physiology, molecular biology; Primary culture of rat hepatocytes, zinc metabolism and intracellular compartmentation, hormone effects, mRNA quantification by dot blot and Northern hybridization; Avail. January 1990; Postdoc. position; Salary negot. 5-9406

Ph.D., 1986; Immunotoxicology, hematology; In vitro and in vivo cellular immunology methods, cytokine, clonogenic assays, transplant immunology, flow cytometry, LC, HPLC, TLC, SDS-PAGE, hybridoma techniques; Avail. June 1989; Academia or industry; Salary negot. 6-9412

Ph.D., 1989; Immunology, viral immunology; Experience in tissue and lymphocyte culture, cytokine bioassays, in situ hybridization techniques to identify cytokine-producing splenocytes; Avail. September 1989; Postdoc. training position; Salary negot. 6-9414

Ph.D., 1970; Immunology and microbiology; Animal tumor models, tumor transplantation, cell cytokotoxicity assays, tissue culture, monoclonal antibody techniques, immunotoxicological and immunohistochemical techniques, receptor-based biosensors, immune tolerance; Avail. immediately; Staff position in academia or industry; Salary negot. 6-9416
Membership in the Federation of American Societies for Experimental Biology and in Its Constituent Societies

Membership in the Federation is limited to societies; there is no individual membership. Any society in the field of biological science may apply for membership, either corporate or affiliate, and may be admitted by a three-fourths majority vote of all members of the Federation Board. The societies listed below presently constitute the Federation.

Since requirements and procedures for election to membership in the member societies vary, the following information is provided:

Corporate Members

The American Physiological Society. Any resident of the Americas who conducts and has published meritorious original research in physiology shall be eligible for proposal for Regular membership. Residents of the Americas who are engaged in research in physiology or related fields and/or teaching physiology shall be eligible for proposal for Associate membership. Residents outside of the Americas who conduct and have published meritorious original research in physiology shall be eligible for proposal for Corresponding membership. Individuals must apply in writing on forms provided by the Society. Two Regular members must sponsor a candidate for membership. Emeritus members also can be sponsors of new members. A Corresponding or Honorary member of the Society may substitute for a Regular member in sponsoring a candidate for Corresponding membership. Council nominates candidates who stand for election by the vote of Regular members at business meetings of the Society. Other classes of membership include Honorary, Emeritus, Student, and Sustaining Associate. Further information and nomination forms are printed in THE PHYSIOLOGIST and are available from the APS Membership Services Department, 9650 Rockville Pike, Bethesda, MD 20814.

American Society for Biochemistry and Molecular Biology. Investigators residing in the Americas who have demonstrated the ability to conduct meritorious original research in biochemistry or molecular biology are eligible for Regular membership. Such individuals must be nominated by two Regular members of the Society and, if favorably recommended to the Council by the Membership Committee, will be elected at any regular meeting of the Society. Individuals not yet fulfilling the requirements for Regular membership may be nominated by two Regular members for Associate membership. Nominees for Associate membership become members immediately on nomination. Eminent biochemists residing in countries other than the Americas may be nominated for Honorary membership. Individuals not otherwise eligible for any type of membership, but who have made significant contributions through service to biochemistry or molecular biology are eligible for designation as a Distinguished Service Associate. Nomination forms and specific nomination criteria may be obtained from MR. CHARLES C. HANCOCK, Executive Officer, 9650 Rockville Pike, Bethesda, MD 20814.

American Society for Pharmacology and Experimental Therapeutics. Any qualified investigator who has conducted and published a meritorious original investigation in pharmacology and is a legal resident of the United States, its dependencies, Canada, or Mexico shall be eligible for Regular membership in the Society. Nominees for membership shall be proposed by two members of the Society who are not members of the Council or of the Membership Committee at the time of the initial nomination. Other classes of membership include Affiliate and Student/Fellow, which are for pharmacologists who are either residents of a country other than the USA, Canada or Mexico, are not now active in research, or who are advanced students or are fewer than 5 years past their doctoral degree. Nomination forms are printed in THE PHARMACOLOGIST and are available from MRS. KAY A. CROKER, Executive Officer, 9650 Rockville Pike, Bethesda, MD 20814.

American Association of Pathologists. Any investigator who, through the use of experimental methods, has contributed meritorious work in pathology is eligible for membership. Candidates shall be nominated by two members and those nominations approved by the Council shall be presented to the Association members for election at the next annual business meeting. Additional information and nomination forms may be obtained from DR. FRANCES A. PITLICK, Executive Officer, 9650 Rockville Pike, Bethesda, MD 20814.

American Institute of Nutrition. Any person who has conducted and published meritorious original investigations in some phase of nutrition and who is professionally active in the field of nutrition shall be eligible for Active membership. Persons rendering superior service to nutrition through teaching, administration, or technical service may also be deemed eligible. Nominees shall be sponsored by two members of the Institute. Nominations should be received by February 1, and those nominations approved by Council will be presented for election at the annual business meeting. Other classes of individual membership include Associate, Emeritus, and Student. Membership in the American Society for Clinical Nutrition, the Clinical Division of the AIN, is based on professional activities in the area of clinical nutrition. All nominees for ASCN membership must be members of AIN or be considered for election simultaneously. AIN/ASCN nomination forms are available from the AIN Secretariat, 9650 Rockville Pike, Bethesda, MD 20814.

The American Association of Immunologists. Investigators qualified by virtue of a doctorate degree or equivalent experience and training who have conducted and published meritorious original investigations in immunology or related disciplines are eligible for membership. Candidates must be nominated by two members of the Association. The recommendations of a membership committee are submitted for election by the membership at the annual spring meeting. For application forms write to DR. JOSEPH F. SAUNDERS, Executive Officer, 9650 Rockville Pike, Bethesda, MD 20814.

Affiliate Member

The American Society for Cell Biology. To be considered for Regular membership, an applicant must hold the Ph.D. or equivalent degree or have equivalent experience, and be sponsored by two Regular or Emeritus members. Other classes of membership are Emeritus and Student. Further information and forms may be obtained from MS. DOROTHEA C. WILSON, Executive Officer, 9650 Rockville Pike, Bethesda, MD 20814.
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Objectives
The Wood/Whelan IUB and ICSU Research Fellowships are designed to support biochemists who need to travel to other laboratories in the IUB/ICSU areas for the purpose of carrying out experiments requiring special techniques or for other forms of scientific collaboration or advanced training.

Conditions of the Fellowships
The fellowships will be awarded for short periods (2 weeks to 2 months, exceptionally 3 months). The fellowship will cover travel costs on the basis of economy or tourist fares (coverage will only be partial for long distances). A basic subsistence allowance of US$25/day will be allotted to fellowship holders, with a geographic adaption factor. There will be no additional stipend for dependents and no provisions made for accidental or health insurance, which are expected to be contracted privately by the fellows.

Recipients of the fellowships are required to make a full declaration to IUB/ICSU of all other support received towards the same travel and subsistence. IUB/ICSU may reduce its financial contribution accordingly. IUB/ICSU fellowships cannot be used to supplement other full time/support fellowships.

Applications
Applications should be sent in triplicate with the following documents:
(A) A research proposal of about two pages typescript indicating clearly: (1) the nature of the project and the type of experiments to be carried out; (2) why it is necessary to travel to another laboratory to conduct the experiments rather than to perform them in the applicant's own laboratory or simply ship the materials; (3) why the particular laboratory has been selected; (4) why the project will require the particular time period requested. If the aforementioned material is not sufficiently clear, the application is likely to be rejected or the decision on it seriously delayed.
(B) A short curriculum vitae of the applicant with a list of publications indicating names and other authors.
(C) A letter of acceptance from the head of the receiving institute and signed by the leader of the group which will receive the recipient.
(D) A letter of recommendation from the head of the department of the applicant's institution indicating support of the applicant and the reasons why the fellowship would be beneficial. This letter should also list all other fellowships previously received by the applicant, especially for travel abroad to attend meetings or study at another institution.

Applications from Africa, Europe or North America should be sent to Dr. Marianne Grunberg-Manago, Institut de Biologie Physico-Chimique, Fondation Edmond de Rothschild, 13, rue Pierre et Marie Curie, 75005 Paris, France.
Applications from Latin America or Asia should be sent to Dr. Jorge E. Allende, Departamento de Bioquimica, Facultad de Medicina (Norte), Universidad de Chile, Casilla 6671, Santiago 7, Chile.

Applications can be submitted at any time but they will be reviewed twice each year, in June and December.

Criteria for Selection of Fellows
The criteria for the selection of applicants are:
(1) Excellence of qualifications of the applicant.
(2) Need to travel to do the experiments and availability of other sources of funds to finance travel. Only exceptionally will support be given to senior scientists or to heads of departments. Fellowships will not be awarded to attend courses, symposia, meetings or congresses.
(3) Geographical distribution.
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CONCEPTS IN MOLECULAR BIOLOGY 1989
Sponsored by the American Association of Pathologists
Cosponsored by the U.S. and Canadian Academy of Pathology
October 19–22, 1989, Bethesda, Maryland

Thursday, October 19
SESSION I: Principles of Molecular Biology
Introduction to Nucleic Acids (DNA, RNA)
Proteins
Gene Expression

SESSION II: Molecular Biology: Strategy and Tools
Extraction of Nucleic Acids
Hybridization Techniques (Agarose gels, southern blots, northern blots, PCR, and probes)
Restriction Fragment Length Polymorphisms (RFLPs)

Friday, October 20
SESSION III: Specialized Techniques
Approaches to Cloning
DNA Sequencing
In Situ Hybridization
Transfection: Introduction of Macromolecules into Mammalian Cells
Laboratory Demonstrations

Saturday, October 21
SESSION IV: Applications to Human Disease I
Chromosomal Localization of a Gene
Gene Rearrangements (chromosomal translocations) in Human Lymphoma
Oncogenes and Growth Factors
Cancer Progression and Metastases

SESSION V: Applications to Human Disease II
Transgenic Mice
Human Immunodeficiency Viruses
Human Papillomaviruses

Saturday, October 21 (continued)
Hepatitis B Virus
Practical Problem-Solving in Molecular Diagnosis

Sunday, October 22
SESSION VI: New Developments in Molecular Pathology Research
Tumor Suppressor Genes
Gene Therapy
New Approaches to Vaccines
Drug Resistance Genes

COURSE ORGANIZERS
Peter M. Howley, MD, Chief, Laboratory of Tumor Virus Biology, National Cancer Institute, National Institutes of Health, Bethesda, Maryland
Lance A. Liotta, MD, PhD, Chief, Laboratory of Pathology, National Cancer Institute, National Institutes of Health, Bethesda, Maryland
Mark E. Sobel, MD, PhD, Senior Investigator, Laboratory of Pathology, National Cancer Institute, National Institutes of Health, Bethesda, Maryland.

WHO SHOULD ATTEND
The course has been designed for diagnostic and experimental pathologists, basic scientists, and clinical investigators who desire to become conversant with the basic principles and concepts of recent advances in biotechnology. Specifically, emphasis will be placed on understanding nucleic acid molecular biology and its application to diagnosis and pathogenesis of human disease.

For Additional Information call AAP: (301) 530-7130

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CELL REGULATION

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• intracellular signaling, phosphoinositol pathway
• oncogenes, GTP-binding proteins
• cell adhesion proteins
• receptors
• growth factors, hormones

Publication will begin with an issue to be mailed to all ASCB members in the fall of 1989.

For information regarding manuscript submissions and subscriptions, please contact:
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INTERNATIONAL ASSOCIATION OF ASTACOLOGY,
AND SOCIETY OF SYSTEMATIC ZOOLOGY

Marriott Copley Place • Westin Copley Place • Copley Plaza Hotel
Boston, Massachusetts — December 27-30

Abstract Deadline: August 4, 1989 Call for Papers: April, 1989 for Oral and Poster Presentations. Note that posters are particularly encouraged, and the ASZ Division of History and Philosophy of Biology welcomes posters as a second paper.

Schedule for December 27, 28 and 29: Plenary Lectures • Oral Papers • Poster Presentations

Schedule for December 30: Society/Divisional Symposia and Workshops plus Elephant and the Blind Zoologists Program

PLENARY LECTURES DECEMBER 27, 28 AND 29:

Wednesday, December 27
EMERGING SYSTEMS: COMPONENTS OF ORGANISMS INCLUDING IONS, MOLECULES, GENES AND CELLS
(Keith Porter, Joseph Bonaventura, Gary W. Litman, and Lynn Margulis)

Thursday, December 28
ORGANISMS AS INTEGRATED SYSTEMS: CELLS, ORGANS, TISSUES
(Hugh Huxley, Howard A. Bern, Berta Scharrer and Marvalee H. Wake)

Friday, December 29
ORGANISMAL SYSTEMS: ANIMALS AND BEHAVIOR
(George O. Mackie, Masakazu Konishi, Stephen J. Gould and E.O. Wilson)

Art, Book and Instrument Exhibits at the Westin Hotel and Harvard University.

Programs on Public Affairs, Ethics, and Tools and Technologies

ASZ Symphony Orchestra
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Socials include a party at the New England Aquarium, closing banquet honoring international guests, and the Third Annual Endowment Auction

Meeting Hosted by Harvard University and Northeastern University
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For more information, contact:
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