

Before ordering

FATTY ACIDS ... DERIVATIVES

from anyone else.

Check the Sigma Catalog!

Do you need Esters such as Methyl, Ethyl, Propyl, Waxy, β-Naphthyl, Cholesteryl Esters? Do you need Acid Chlorides, Fatty Alcohols, or Fatty Amides? Do you need Free Acids?

Many of the following are available in a variety of these derivatives:

Eve	n-Carbon	Odd	d-Carbon	_	nsaturated -Double Bond	Two or	Unsaturated More Double Bonds
C ₄	Butyric	C ₃	Propionic	C14:1	Myristoleic	$C_{18:2}$	Linoleic
C ₆	Caproic	C ₅	Valeric	C _{14:1}	2-Hexadecenoic	$C_{18:2}$	Linoelaidic
C ₈	Caprylic	C,	Heptanoic	C _{16:1}	Palmitoleic	$C_{18:3}$	Linolenic
C_{10}	Capric	C,	Nonanoic	C _{16:1}	Palmitelaidic	$C_{20:2}$	Eicosadienoic
C_{12}	Lauric	C_{11}	Undecanoic	$C_{18:1}$	Elaidic	$C_{20:3}$	Eicosatrienoic
C_{14}	Myristic	C ₁₃	Tridecanoic	$C_{18:1}$	Oleic	C20:4	Arachidonic
C_{16}	Palmitic	C ₁₅	Pentadecanoic	$C_{18:1}$	Petroselinic	$C_{20:5}$	Eicosapentaenoic
C ₁₈	Stearic	C17	Heptadecanoic	$C_{18:1}$	Vaccenic	$C_{20:6}$	Docosahexaenoic
C_{20}	Arachidic	C19	Nonadecanoic	$C_{20:1}$	Eicosaenoic		
C_{22}	Behenic	C ₂₁	Heneicosanoic	$C_{22:1}$	Erucic		
C24	Lignoceric	C_{23}	Tricosanoic	$C_{24:1}$	Nervonic		

A number of the corresponding Mono-, Di-, and Triglycerides are available. Also check our catalog for Phospholipids and Sphingolipids.

Well over 500 Lipids and related products are listed in our catalog. GLC data available upon request.

If you find some of the Sigma prices to be a tiny fraction of what some other dealers charge, don't let it fool you into thinking "you get what you pay for." Sigma has been well-known for 24 years for price reductions while maintaining the world's highest standards of purity, honestly represented. Satisfaction is always guaranteed.

For the Clinica	For the Clinical Determination of TRIGLYCERIDES							
Ask Fo	or Sigma Tec	hnical Bulletin No. 405	or Order:					
Kit. N	lo. 405-B	Up To 100 Assays	\$26.25					
Kit. N	lo. 405-A	Up To 100 Assays	\$47.00					

The Kits are identical except 405-A contains Triglyceride "purifier" in premeasured ready-to-use vials.

C.I.F. Destination Anywhere in the World Via Air

ORDER DIRECT

It's a Pleasure Doing Business With Sigma!

The Research Laboratories of

TELEPHONE COLLECT



from ANYWHERE in the WORLD Day, Station to Station, 314-771-5750 (Including Saturday and Sunday until 1 P.M.)

> Night, Person to Person, Dan Broida, 314-993-6418

Most orders will be shipped within hours TWX [Teletype] Day or Night: COLLECT 910-761-0593 TELEGRAM: SIGMACHEM, Saint Louis, Missouri



CHEMICAL COMPANY

division of SIGMA INTERNATIONAL, LTD.

P.O. BOX 14508 • SAINT LOUIS, MISSOURI 63178 U.S.A.

MANUFACTURERS OF THE FINEST BIOCHEMICALS AVAILABLE

Distributed through:

SIGMA LONDON Chem, Co, Ltd. • Norbiton Station Yard, Kingston-upon-Thames, Surrey, KT2 78H, England
Telephone: 01-549 3171 (Reverse Charges)

SIGMA ISRAEL Chem. Co. Ltd. • P.O. Box 25077, Tel-Aviv 61 250, Israel • Telephone; 03-760654 (Reverse Charges)



A colour film about one of the scientific dramas of the century: the race which ended in the discovery of the double helix as a workable structure for DNA. The film describes, in their own words, the interplay of the work of James Watson and Francis Crick at Cambridge, Maurice Wilkins at King's College London, and Linus Pauling at Caltech.

The four men prove to be engaging raconteurs as they take us through the events leading up to final success in 1953. With the edge of controversy now dulled we are offered, through the scientists' laconic description, a fresh and entertaining study of the fascinating issues involved at many levels in this remarkable human achievement. On the technical level, the rise of molecular biology with its foundation in crystallography and the capacity of modelbuilding to give tangible form to diffuse X-ray patterns are put in historical perspective. Scientific arguments are developed as needed for the narrative - as in Watson's book The Double Helix the scientists do not talk down to their audience. However, the film can profitably be shown to any level of student audience if it is preceded by discussion of the relevant fundamental biochemistry. (Wiley's prize-winning teaching film DNA-Blueprint of Life might be ideal.) The DNA Story does not claim to teach the biology of DNA; rather it is a valuable illustration to supplement a biochemistry, biology or general science course and an excellent and enjoyable introduction to the exciting and usually remote world of scientific reasearch. For the better informed the film should prove to be a most important historical document. Running time

May 1973 0471 187658 45 minutes

A VSM production distributed in English language countries, Africa, India, and the Middle East by Wiley.

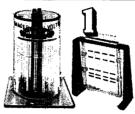
Price in the U.K: £148 plus VAT weekly hiring at £12 (Schools £8) plus VAT

JOHN WILEY & SONS LTD Battrostiane Chahender Sossex England



SAVANT'S Analytical Group

Every research laboratory can use one or more of these systems.



ACRYLAMIDE GEL ELECTROPHORESIS

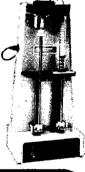
Savant offers the most complete range of ROUND GEL or SLAB GEL equipment...including Destainers, Polymerizing Racks and Power Supplies.

SEPARATION

THE FAMOUS MAIZEL

The instrument of choice in over 700 laboratories for the analysis of proteins by gel fractionation and collection

FRACTIONATION





NEW-IMPROVED UNIFRAC

FRACTION COLLECTOR

The system that allows the researcher to collect fractions in Scintillation Vials, Test Tubes and Gradient Tubes; Collect 1 drop or 999 drops with an instrument that contains ONLY ONE MOVING PART.

You owe it to your lab to investigate these systems by requesting Catalog No. 123.



Savant Instruments, Inc.

221 Park Ave. / Hicksville, N.Y. 11801 / USA

ADVERTISING' RATES

Cover and
Special Positions £90
Full Page £70
Half Page £40
Quarter Page £25

Agency Commission 10% Publisher's Discount 10%

All communications regarding advertising matters should be addressed to:

Advertisement Section, Biochemical Society, 7 Warwick Court, London, WC1R 5DP Telephone: 01-242 1076

(4 lines)

THE BIOCHEMICAL JOURNAL

UNIVERSITY OF STRATHCLYDE DEPARTMENT OF BIOCHEMISTRY

Research Fellow in Biochemistry of Reproduction

Applications are invited for the above post in an M.R.C. Research Group investigating Biochemical Aspects of Reproduction—primarily in connection with uterine metabolism in early pregnancy.

Applicants, who should possess (or be about to possess) a Ph.D., should have a good primary Degree in Biochemistry or a cognate subject and be familiar with general biochemical techniques involving radioisotopes and macromolecular studies

Salary in the range £2079-£2556 per annum, placing according to qualifications and experience. F.S.S.U. benefits.

Applications (quoting R11/73) to Professor P. J. Heald, Department of Biochemistry, Royal College Building, University of Strathclyde, 204 George Street, Glasgow, G1 1XW, from whom further particulars can be obtained.

UNIVERSITY OF CAMBRIDGE

Department of Radiotherapeutics

Organic chemist or biochemist with research experience required to join a team investigating problems involved in the development of radioactive drugs for the treatment and diagnosis of cancer and related topics, including radiosensitizers. The successful applicant will be expected to pursue an independent line of research within the general framework of the activities of the department. Salary provided from a Research Grant within the range £1,539-£2,238, according to age, qualifications and experience. The appointment is renewable annually up to three years.

Applications with the names of referees should be sent to the Regius Professor of Physic, Department of Radiotherapeutics, Addenbrooke's Hospital, Hills Road, Cambridge CB2 2QQ.

CLINICAL SCIENCE

EDITORIAL BOARD

For the Biochemical Society

R. Hoffenberg, Chairman

C. N. Hales, R. G. Huntsman, G. H. Lathe, J. Liddell,

I. MACINTYRE, K. L. MANCHESTER, J. A. OWEN, R. W. E. WATTS

For the Medical Research Society

J. S. ROBSON, Deputy Chairman

R. D. COHEN, W. I. CRANSTON, G. CUMMING, D. M. MATTHEWS,

A. POLAK, J. I. S. ROBERTSON, B. ROBINSON, S. J. G. SEMPLE

Volume 44, No. 6 June 1973

CONTENTS

The effect of local anaesthesia of the airway on respiratory reflexes in the rabbit. By S. K. JAIN, DIANA TRENCHARD, FELICITY REYNOLDS, M. I. M. NOBLE and A. GUZ

Effect of change of posture on blood pressure and plasma renin concentration in men with spinal transections. By R. H. JOHNSON and D. M. PARK

Mitochondrial volume in skeletal muscle from young and old physically untrained and trained healthy men and from alcoholics. By K.-H. Kiessling, L. Pilström, J. Karlsson and Karin Piehl

Iron-deficiency anaemia: its effect on maximum aerobic power and responses to exercise in African males aged 17-40 years. By C. T. M. DAVIES, A. C. CHUKWEUMEKA and J. P. M. VAN HAAREN

Polycythaemia in a selected group of patients with chronic airways obstruction. By B. D. W. HARRISON

Incorporation of [4-14C]δ-aminolaevulinate into urinary porphyrins in porphyria cutanea tarda: effect of chloroquine therapy. By J. J. F. Taljaard, B. C. Shanley, S. M. Joubert and W. M. Deppe

Sites of maximal absorption and hydrolysis of two dipeptides by rat small intestine in vivo. By R. F. Crampton, Maria T. Lis and D. M. Matthews

The effect of anticonvulsant therapy upon the absorption of folates. By C. Fehling, Margaretha Jagerstad, K. Lindstrand and Anna-Kerstin Westesson

SHORT COMMUNICATIONS

Effects on serum lipids of different dietary fats associated with a high sucrose diet. By J. I. Mann, G. S. Watermeyer, E. B. Manning, J. Randles and A. S. Truswell

The calcium lowering effect of synthetic human, porcine, and salmon calcitonin in patients with Paget's disease. By L. GALANTE, G. F. JOPLIN, I. MACINTYRE and N. J. Y. WOODHOUSE

A function of synovial membrane of normal and diseased humans in relation to movement of small-molecular-weight ions. By D. Kremer, S. D. Deodhar and W. C. Dick

Plasma dopamine β-hydroxylase and noradrenaline amounts in essential hypertension. By L. B. Geffen, R. A. Rush, W. J. Louis and A. E. Doyle

CORRESPONDENCE SECTION

Body potassium and fat-free mass. By L. Burkinshaw, J. E. Cotes, K. Boddy, Priscilla C. King, J. Womersley and J. V. G. A. Durnin

MEDICAL RESEARCH SOCIETY (Meeting on 30 March 1973)

Demonstrations

Communications

Subscription: £2.00 (\$7.50) per part; £20.00 (\$70.00) per year.

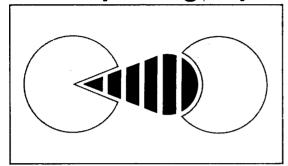
Orders may be placed with your bookseller, or sent direct to the publishers.

BLACKWELL SCIENTIFIC PUBLICATIONS LTD

5 ALFRED STREET, OXFORD, OX1 4HB, ENGLAND

Affinity Chromatography

with spacer groups



AH-Sepharose 4B CH-Sepharose 4B

for coupling ligands containing a free carboxyl or a primary amino group to the Sepharose matrix via a six carbon atom "spacer" group. AH-Sepharose 4B, with a terminal amino group, and CH-Sepharose 4B, with a terminal carboxyl group substantially reduce the steric hindrance to binding which may occur when small ligands are coupled to the Sepharose matrix.

The ligands can be coupled directly to these "spacer" groups using a carbodiimide reaction, thereby reducing the number of synthesis steps required to make the adsorbent.

AH-Sepharose 4B, containing $-(CH_2)_6NH_2$ groups, and CH-Sepharose 4B containing $-(CH_2)_5$ COOH groups, are available in packs of 15 g corresponding to a gel volume of 60 ml.

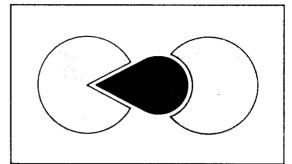
Con A-Sepharose®

Provides new possibilities for the isolation of glycopeptides, glycoproteins and polysaccharides by affinity chromatography. Concanavalin A has been coupled to Sepharose 4B by the CNBr method and reacts specifically with terminal D-mannose-like residues.

Con A-Sepharose is available in packs containing 100 ml sedimented gel, 800 mg bound concanavalin A.

Pharmacia (Great Britain) Ltd. Paramount House 75 Uxbridge Road EALING LONDON W5 5SS

and without



CNBr-activated Sepharose 4B

is a ready activated matrix to which proteins and other molecules containing primary amino groups may be coupled directly. The procedure is quick, easy and safe, and preserves the binding activity of sensitive ligands.

CNBr-activated Sepharose 4B is the material of choice for the immobilization of macromolecules in the preparation of biospecific adsorbents for affinity chromatography. Its use in the study of proteins, nucleic acids, polysaccharides etc. is already well documented. Sepharose provides a matrix which is stable, has a high capacity even for very large molecules, and displays low nonspecific adsorption.

Freeze-dried CNBr-activated Sepharose 4B is available in packs of 15 g corresponding to a gel volume of 50 ml.



Hoppe-Seyler's Zeitschrift für Physiologische Chemie

Editors in Chief

A. BUTENANDT · F. LYNEN · G. WEITZEL

Subscription Rates
For one volume (12 parts) DM 420,—

Vol. 354 No. 4

Contents

April 1973

Steroids as immunochemical probes, I: Influence of oxo- and/or hydroxy-groups at C-16/C-17 of estrogens on affinity to anti-estrone-, anti-estradiol-17 α - and anti-estradiol-17 β -anti-sera

E. Kuss, R. Goebel and H. Enderle

S-Alkylmercaptogroups for the SH-protection of cysteine, III: Synthesis, stability and thiol-disulfide exchange of some other S-(alkylmercapto)cysteines

P. HARTTER and U. WEBER

The cleavage of prolyl peptides by kidney peptidases: Purification of iminodipeptidase (Prolinase)

H. MAYER and A. NORDWIG

The cleavage of prolyl peptides by kidney peptidases. Detection of a new peptidase capable of removing *N*-terminal proline

A. Nordwig and H. Mayer

Renal excretion of 1,4-dinitrosopiperazine in dogs as an indication of nitrosamine formation in vivo

J. SANDER, F. SCHWEINSBERG, M. LADENSTEIN, H. BENZING and S. H. WAHL

Studies on the effect of membrane lipids on the activity of NADH: semidehydroascorbic acid oxidoreductase (EC 1.6.5.4) of rat liver microsomes

H.-U. SCHULZE, H. GALLENKAMP and HJ. STAUDINGER

Anomeric specificity and anomerase activity of glucose phosphate isomerase (EC 5.3.1.9) from baker's yeast

B. WURSTER and B. HESS

Metabolic transformation of colchicine, I: The oxidative formation of products from colchicine in the Udenfriend system

M. SCHÖNHARTING, P. PFAENDER, A. RIEKER and G. SIEBERT

Studies in vivo and in vitro on the methylation of phosphatidyl-N,N-dimethylethanolamine to phosphatidylcholine in rat liver

D. LEKIM, H. BETZING and W. STOFFEL

Studies on the chemistry of arterial wall, XVI. Topochemical studies on the glycosaminoglycan and lipid metabolism in bovine arterial tissue.

 $M.\ A.\ Hodara,\ K.\ v.\ Figura,\ I.\ Filipovic and E.\ Buddecke$

Action of thiamine on protein and nucleic acid metabolism, III: Transketolase activity of *Lactobacillus viridescens* during thiamine starvation M. BÖHM, B. HESS, K. H. AVERKAMP and W. KERSTEN

Isolation and characterization of glycopeptides from pig aorta, II

B. KRASKA and A. KLEMER

SHORT COMMUNICATION

The formation of γ -aminobutyric acid in liver cell nuclei

N. SEILER, B. KNÖDGEN and A. ASKAR

Indexed in Current Contents



Walter de Gruyter · Berlin · New York

when you want the best*

The success of your dehydrogenase enzyme reactions depends to a large extent on the quality and reliability of the nicotinamide co-enzymes you use.

As PRIME manufacturers of co-enzymes Boehringer Mannheim — THE ENZYME PEOPLE know from experience this need for quality and reliability and fulfill it in the following wavs:-

Quality

- -- purity is determined enzymatically as well as by optical density measurements
- thus you can be sure the co-enzymes are tested from a functional viewpoint.

Reliability

- -constantly quality controlled you have confidence in your and quaranteed to minimum specifications throughout their shelf life
 - results.

Applications —a choice of two grades for your particular requirements - GRADE I - NAD, NADH free from LDH inhibitors for the best in accuracy and precision.

GRADE II - a 'workhorse' grade when economy is a factor.



insist on Boehringer Mannheim Colenzymes

or further details contact.

The Beehringer Corporation (London) Ltd. House, Ukbridge Road, Faling, London W5 2TZ