STANFORD UNIVERSITY MEDICAL CENTER
STANFORD, CALIFORNIA 94305 • (415) 321-1200 EXT. 5785

STANFORD UNIVERSITY SCHOOL OF MEDICINE
Department of Anesthesia

November 30, 1973

Professor Joshua Lederberg
Department of Genetics
School of Medicine
Stanford University
Stanford, California 94305

Dear Dr. Lederberg:

Thank you for including my laboratories in the group which could be served by a GC/HRMS facility. As you know, Dr. Cohen and I have our own GC/MS/ Computer System. Our use of the proposed facility would be limited to those times when it is necessary to use high resolution ot identify a metabolite. I would estimate a need for three GC/HRMS and three HRMS Spectra per year. My work is entirely supported by the National Institutes of Health.

Sincerely yours,
James R. Trudell by RW
James R. Trudell, Ph.D.

JRT:rw

126

NOV 27 1973

VETERANS ADMINISTRATION
HOSPITAL
3801 MIRANDA AVENUE
PALO ALTO, CALIFORNIA 94304

IN REPLY
REFER TO:

November 26, 1973

Professor J. Lederberg
Department of Genetics
Stanford University School of
Medicine
Stanford, California 94305

Dear Prof. Lederberg:

Dr. Allan Duffield of your department has informed me that you plan to obtain additional apparatus that would provide high resolution GC/MS as a service to the Stanford community.

We have in the past used the hospitality of your department in the identification of metabolites and derivatives of phenothiazine drugs and cannabinoids by GC/MS. Originally, we had the collaboration of Dr. B. Halpern and more recently Dr. A. Duffield, who was instrumental in helping us with some of our problems.

Our department would indeed be most interested in availing ourselves of GC/MS analyses in the course of our current NIH projects which again are concerned essentially with drug metabolism and the isolation and characterization of unknown drug derivatives.

As a rough estimate, I would think that we may be interested in the analyses of about five samples per month, two of which will require high resolution MS.

I certainly hope that your project to acquire the sophisticated new instrumentation you are seeking will be successful.

Sincerely yours,

I. S. Forrest

Irene S. Forrest, Ph.D.
Chief, Biochem. Research Lab.
(151F)

ISF:jr

Show veteran's full name, VA file number, and social security number on all correspondence.

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DEC 3 1973

DATE: November 30, 1973

TO : Joshua Lederberg

FROM : I. Rabinowitz, Ph.D.
D.I. Wilkinson, Ph.D.

SUBJECT: RE: NIH GC/HRMS Proposal

Research carried out in this department has strongly implicated a role for the prostaglandins in the etiology of psoriasis (E. M. Farber, K. Aso, 32nd Annual Meeting, American Academy Dermatology, Chicago, Ill., Dec. 1973; E. M. Farber et al, J. Invest. Derm., in preparation; E. M. Farber et al, Nature New Biology, in preparation). The prostaglandins are a class of C_{20} fatty acids, having molecular weights near 350 and basal tissue concentrations in the nanogram and picogram per gram range. The prostaglandins are presently detected by radioimmunoassay, bioassay and mass spectrometric techniques, among others. There is considerable controversy concerning the method of choice for measurement of absolute amounts of prostaglandin in various tissues. In particular, it has been suggested that mass spectrometric techniques yield more accurate quantitative assays than radioimmunoassay techniques (Adv. Biosciences, 9, 71-123, 1973, Ed. G. Raspé, S. Bernhard, Pergamon Press, N.Y.). Radioimmunoassay techniques are currently in use in our laboratories, and the addition of mass spectrometry capability would greatly increase the definitiveness of our studies, as well as make available to us a powerful tool for the study of prostaglandin precursors and metabolites. Work to date has been supported in part by NIH Grant No. AM 15107.

Israel Rabinowitz
I. Rabinowitz, Ph.D.
Department of Dermatology

David I. Wilkinson
D. I. Wilkinson, Ph.D.
Department of Dermatology

IR:DIW:ss

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DATE: November 30, 1973

TO : Joshua Lederberg, Department of Genetics
Carl Djerassi, Department of Chemistry

FROM : Eugene D. Robin, M.D., Department of Respiratory Medicine

SUBJECT: Your memo of November 20, 1973 describing a proposed GC/HRMS facility.

I have applied to the NIH for a continuation of my research grant, Adaptations To 0_2 Depletion in which I have proposed to measure the redox state of NAD^+/NADH and $NADP^+$/NADPH by measuring the ratio of oxidized to reduced redox pairs using g gas chromatography/mass spectrometry. These analyses will be conducted with the assistance of Drs. Alan Duffield and Wilfred Pereira of the Department of Genetics. I welcome the opportunity to have a GC/HRMS facility available on campus to support the GC/LRMS available in the department of genetics. The facility you propose to establish will be of importance to us in those instances where assignment of molecular composition to ionized fragments is crucial for mass spectral interpretation. I would anticipate using this service between one and two times a month.

Sincerely yours,

Gene

Eugene D. Robin, M.D.
Professor of Medicine and Physiology

EDR:ods

NOV 30 1973

VETERANS ADMINISTRATION
HOSPITAL
3801 MIRANDA AVENUE
PALO ALTO, CALIFORNIA 94304

November 28, 1973

IN REPLY
REFER TO:

Dr. Joshua Lederberg
Department of Genetics
Stanford University School of Medicine
Palo Alto, California 94305

Dear Dr. Lederberg:

I should be very pleased if you were able to obtain through the National Institutes of Health a GC/MS facility which could be shared jointly by members of the Stanford University faculty.

At present, I am being funded under grant DA-00424-01 for a study of the metabolism of marihuana. We have made significant progress in our methods of extracting metabolites, in isolating new ones by thin-layer chromatographic techniques, and by purifying them to some degree as determined by GLC. The big bottleneck has been the lack of ready access to a GC/MS set-up which would permit further characterization of the metabolites.

Our needs would be primarily for GC/low resolution MS, for which we have extensive need, perhaps the analysis of 15-25 samples per month. Depending on the outcome of these analyses, we might have 1 to 2 samples per month requiring GC/high resolution MS. We anticipate having little need for high resolution MS without GC because of the fact that our samples are isolated from complex mixtures and are nearly impossible to purify.

If there is any way in which I could assist in helping obtain such a facility for the University, please let me know.

Sincerely yours,

Leo E. Hollister, M.D.
Associate Professor of Medicine

LEH:bh

Show veteran's full name, VA file number, and social security number on all correspondence.

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STANFORD UNIVERSITY HOSPITAL
Pharmacy Department

Date September 5, 1973

To: Dr. J. Lederberg, Director
Department of Genetics

From: Hiram H. Sera, Director

Subject: Drug Analysis Service with Gas Chromatograph and Mass Spectrometer.

I wish to express our appreciation to your department for assisting us in identifying a drug sample submitted to us from the E1 patient care area.

BACKGROUND:

The patient on E1A with G.I. disturbance, joint pains and occasional spike temperature was found to possess an unidentified medication in a plastic vial and was found to have self-administered the drug intramuscularly while in the hospital. The house staff was notified and the drug sample was submitted to us for immediate identification.

Through my previous association and knowledge of Drs. Summons' and W. Perieras' (in Dr. Duffield's instrumentation research laboratory) work with gas chromatograph and mass spectrometer, I had taken the liberty to request their assistance in the identification.

In an hour, the determination was made and the drug was found to be Pentazocaine or Talwin which is a synthetic analgesic used commonly in this hospital in tablet and injection forms.

Since we do occasionally receive similar requests from physicians, I wish to call on your staff again in the future. Thank you.

HHS:lh
cc: Mr. John Williams
Dr. Roger Summons
Dr. W. Periera
Dr. A. Duffield

DATE: November 26, 1973

TO : Joshua Lederberg, Department of Chemistry
Carl Djerassi, Department of Chemistry

FROM : Sumner M. Kalman

SUBJECT: Mass Spectrometry, Your Memo of November 20, 1973.

A central facility for mass spectrometry and GC/MS would be highly desirable from my point of view. We often need to identify metabolites of drugs that interfere with our assays, and that represent research problems as well. Frequently we need to check the purity of a reference material which is in short supply. I have received much help from both your laboratories in the past and would welcome the opportunity to use an expanded facility. For many of our problems low resolution MS is satisfactory and I hope you mean to provide this service too.

With respect to your questions I anticipate that

(1) Yes.

(2) We would probably use GC/MS once a month or more. We would use MS at about the same rate.

(3) Yes.

Sincerely yours,

Sumner M. Kalman M.D.

Sumner M. Kalman, M.D.
Professor of Pharmacology
Director, Drug Assay Lab

DATE: 3 December 1973

TO : Joshua Lederberg

FROM : Jack Barchas

SUBJECT: GC/HRMS

Our thanks to you and Alan Duffield for inquiring of our interest in the proposed GC/HRMS. We would find it quite useful, as we are currently applying for funding for a quadrupole mass spectrometer for mass fragmentography studies. With such a unit, there would be many times when the capability of the HRMS instrumentation would be valuable in structural elucidation. We would expect very heavy utilization of our instrument if we were to obtain the funding, and, therefore, would expect to make considerable use of the proposed GC/HRMS, which is an essential ancillary tool.

The GC aspects of the instrument would be valuable, since we would expect to be studying a number of unknowns and the GC separation would be an integral part of that process.

Our work is supported by NIMH, ONR, NASA, and the Alcohol Abuse division of HEW.

Jack

JDB/rs

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NOV 30 1973

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AMES RESEARCH CENTER
MOFFETT FIELD, CALIFORNIA 94035

REPLY TO ATTN OF: LPE: 239-9

November 28, 1973

Professor Joshua Lederberg
Department of Genetics
School of Medicine
Stanford University
Stanford, CA 94305

Dear Professor Lederberg:

I was delighted to learn of your proposed plans to upgrade your mass spectrometry capabilities by providing routine high resolution mass spectrometry (HRMS) and combined gas chromatography/high resolution mass spectrometry (GC/HRMS). Such a service could be of inestimable value to our program. As you know we are developing gas chromatography/high resolution mass spectrometry facilities for NASA's interests. In particular we are modifying our equipment in order to determine carbon and nitrogen isotopic compositions of organic molecules. If available we would use your proposed facilities for our routine GC/HRMS analysis of biologically significant molecules which are sought in our program. Most of our work requires GC/HRMS as opposed to HRMS. In addition, we are also most interested in computer programs which aid in mass spectral interpretations. Although we have a few of our own programs, we would be most eager to upgrade our own interpretation capabilities through use of programs from your facility.

Our work thus far has been supported solely by NASA; we are not supported at present by NIH.

I hope that our expression of interest will be of use to you in obtaining funding for a potentially most useful analytical facility.

Sincerely yours,

Keith A. Kvenvolden
Chief, Chemical Evolution
Branch

DATE: November 28, 1973

TO : Joshua Lederberg, Ph.D.
S331

FROM : William R. Fair, M.D.
S287

SUBJECT: Use of facilities for high resolution mass spectral analysis with gas chromatography.

As your memo of November 1973 requested, we have answered the questions concerning our interest in GC/HRMS.

1. This service would be of definite value to us in two projects currently being investigated in our laboratories. a) The identification, distribution, and biological significance of the prostatic antibacterial factor (PAF). Our preliminary experiments indicate that this is a basic polypeptide, perhaps attached to a divalent metal such as zinc. b) This service would also be of value in the determination of the urinary polyamine levels in patients with various genitourinary tract malignancies. Our initial experiments along this line indicate that there is significant elevation of polyamines in patients with prostatic carcinoma. The use of GC/HRMS would enable a more precise quantitation of these differences and enable us to expand our research into other areas concerning the biochemical significance of the polyamines.

2. I would estimate that on the PAF project we would use approximately 2-4 samples per month and perhaps 10-12 samples per month on the polyamine projects. Both of these projects would require the use of GC/HRMS.

3. A portion of our research on the PAF is currently supported by a grant from the NIH. The amount of this grant is $36,698, and this grant will terminate on December 31, 1974.