

STANFORD UNIVERSITY
MEDICAL CENTER
PALO ALTO, CALIFORNIA

DEPARTMENT OF GENETICS
School of Medicine

June 28, 1961

Davenport 1-1200
Cables STANMED

Dr. Torbjorn Caspersson
Karolinska Institutet
Stockholm, Sweden

Dear Torbjorn:

As I understood that you were eager to have a confirmation of your plans before July 1, I cabled you today, and hope that this was in good time for you. We are most interested to enlist your cooperation in some of the analytical and design problems; and, as I indicated in the cable can reserve \$5000 in the budget for the forthcoming year to meet some of the necessary costs. These funds can be paid, as required, against an invoice from your Institute to the Department of Genetics here. The amounts should be recorded as "for analytical services -- ultramicrospectrophotometry" or for "instrumental components for ultramicrospectrophotometry". You should be able to receive payments within two or three weeks of the time we receive the invoices.

Elliott has helped to clarify some of the issues raised in your letter, and on the basis of his visit. I am particularly disturbed to learn of the residual chromatism of the Zeiss optics, and would be anxious to have a more precise indication of its extent from you. Since we will be using these optics for spectrography, the image for different wavelengths will be dispersed to different positions; this suggests the possibility of compensating for the chromatism by distorting the image plane, or by introducing figured prisms. Is there any possibility of obtaining actual measurements of the variation of focal parameters with wavelength for the lenses?

In addition, as we have already discussed, I would be most grateful for some preliminary measurements with your present instruments on some test samples, e.g., the microbial concentrate that we recently sent to you. (It would be most advantageous to have accompanying photomicrographs of the individual specimens that you have selected for spectral measurements). We have been having some difficulties in transferring our specimens from Ludox to alcohol or to polyvinyl alcohol films, and there are some equally trivial (but vexatious!) technical and personnel problems that have delayed this aspect of our work during the past few weeks. However, you should soon receive some additional specimens from us; especially as we now have a small stock of .35 mm quartz cover glasses. These will include a few minerals that we might have reason to believe might be sources of artifacts or confusion, for example a 'monazite' ore. I would also send you some dust collections: it would be instructive to compare the observed spectra of the obvious mineral particles and some of the larger spores, pollen grains, etc., also to be found in these specimens. As you point out, it may be heroic to leap immediately to the measurement of 1-micron objects, and we might relax this condition for our first efforts, and at least until we have somewhat better

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appreciation of the kind of background signals that we might get.

I also appreciate your thoughtful comments on the oscillatory-focussing system. There can be little doubt that some comparable mechanism, together with the fine linear scanning, will be necessary. However, I believe that it may save some duplication of effort if this study can be coordinated with a general one on automated microscopy. The NASA has recently sent out "requests for proposals" to a number of industrial contractors. Within the next two weeks, it will be evaluating these proposals, and one or two contractors will be selected to make a comprehensive engineering study. I would like to suggest that one of these concerns be apprised of your interest and likely contributions to the design conceptions, and that we then make some arrangement to coordinate these ideas. This should not preclude further independent work -- especially as these will be design (not fabrication) contracts at the early stages, and it may be important to improve the performance of our UMSP for calibration studies during the next year. I trust you will give me the discretion to bring up this idea with the engineering groups that are given the contract(s).

Needless to say, I am as anxious to avoid notorious publicity in this area as you are. However, I must make some mention of our relationship in progress reports to NASA, and it is conceivable that some of this may eventually leak out. However, I do not think much public attention can come of it unless your Swedish press are unusually attentive. On the contrary, I fear that your contributions may be underemphasized in some announcements that may appear, but I am sure you will understand how this might come about.

With cordial regards,

Joshua Lederberg
Professor of Genetics

Enc: Sample of 'Monazite' ore for UMSP and micrography of a few particles.