CALIFORNIA INSTITUTE OF TECHNOLOGY

ENVIRONMENTAL SCIENCE & ENGINEERING
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JARED RENTON LEADBETTER
ASSISTANT PROFESSOR
OF ENVIRONMENTAL MICROBIOLOGY

January 22, 2004

Dear Prof. Glazier,

I am writing this letter in support of **Jong Wook Hong**, who has applied for your open faculty position.

I have known Jong Wook for 18 months, since he first started working to develop a microfluidic device to be used to sort and separate complex mixtures of microorganisms from the environment. One of the goals of that project is to be able to perform on-chip quantitative and multiplex reverse transcriptase PCR in single cells after they have been resolved from the complex mixture. As an environmental microbiologist, the development of this technology will have a huge impact on my research program. Thus, Prof. Steve Quake and Jong Wook have solicited my laboratories involvement in helping to develop the "proof-of concept" experiments to test these devices.

In my laboratory, we currently have *no notion* of the morphology or phylogeny of a key environmental, not-yet-cultivated organism that we know only because it encodes an important functional gene that we have cloned and studied. With the help of the microfluidic device technology, we hope to be able to forge concrete connections between this genotype of interest and the morphotype and ribotype of the cell types that encode it. This approach contrast with an approach many laboratories are currently taking. Many are cloning environmental metagenomes, i.e. large fragments of genomic DNA isolated from natural samples that might have contain as many as a thousand microbial species. Such is a fascinating endeavor, but results in the total collapse of the genetic *filing system*, scrambling pages of data normally constrained to their proper "*folders*", the cells comprising the species sampled. You can read one page, but do not know what other pages go with it. Jong-Wook's single cell approach holds the promise of avoiding such shortcomings.

I talk with Jong-Wook frequently. He has been working very diligently to implement this device with one of my students. Without going into the gory details, let me say that they are making excellent headway -- I have every reason to be optimistic that they will be successful in generating some very high profile findings in the near future. Dr Hong

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works well with others and is clearly very skilled at the bench. I have enjoyed interacting with him. I anticipate that he will be an outstanding colleague and faculty member.

Thank you for your consideration of **Dr. Jong Wook Hong's** application. Please do not hesitate to contact me further if I may be of any more assistance in this matter. Thank you.

Thank you very much.

Sincerely,

Jared Renton Leadbetter
Assistant Professor of Environmental Microbiology

Leadbetter's research program at Caltech focuses on interspecies microbial interactions and has two distinct thrusts. One is the biodegradation of an important class of bacterial signaling molecules, acyl-homoserine lactones. The other is the mutualistic symbioses formed between termites and their diverse gut microbiota. He has published in Science, The Journal of Bacteriology, Applied and Environmental Microbiology, Microbiology-UK, and Archives for Microbiology, among others.

Leadbetter graduated with a BA with Honors in the Biological Sciences from Goucher College; and with a Ph.D. in Microbiology from Michigan State University, where he was a participant in the NSF Science and Technology Center for Microbial Ecology under the tutelage of John Breznak. He joined the Caltech faculty in the year 2000 after spending two years at The University of Iowa in the laboratory of E. Peter Greenberg, where he was an NSF Postdoctoral Fellow in the Biosciences Related to the Environment.