NEW YORK UNIVERSITY SCHOOL OF MEDICINE

Wen-Biao Gan, Ph.D.
Assistant Professor of Physiology and Neuroscience
Skirball Institute of Biomolecular Medicine
Molecular Neurobiology Program
540 First Avenue, New York, NY 10016

Telephone: 212-263-2585
Facsimile: 212-263-8214
E-mail: Gan@saturn.med.nyu.edu

November 6, 2005

Yves Brun,
Systems Biology/Microbiology Faculty Search,
Department of Biology,
Indiana University,
Jordan Hall 142, 1001 E 3rd St,
Bloomington, IN 47405-7005

Dear Dr. Brun:

I am writing to strongly support Dr. Yun Zhang's application for the assistant professor position in your Department. I have known Yun for six years since she was a Ph.D. student in the Department of Biological Sciences at Columbia University, where I also got my Ph.D. from. I first met Yun when I moved to New York University and visited Martin Chalfie's lab in 1999. Since then, I have witnessed Yun evolve into a creative, independent and devoted researcher.

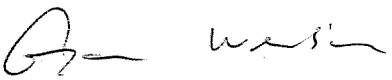
Yun got her bachelor's degree in Biochemistry at Beijing University, which is the top university in China and therefore is extremely competitive to get in. This educational background is usually a good measure of a student's qualities. Indeed, Yun always strikes me as a very talented, independent and persistent student. During her Ph.D. study, she developed a novel method to identify genes that are regulated by a transcriptional factor, *mec-3*, that determines the fate of touch cells - a long-standing question in Chalfie's lab. Because there are only few touch neurons in *C. elegans*, Yun started out to enrich wild-type and *mec-3* mutant touch receptor neurons by GFP-based cell sorting from many embryos. She then amplified RNA from these enriched cells and compared differential gene expressions between wild-type and mutant cells using DNA microarrays. During the course of this work, Yun had to overcome many technical obstacles quite independently and developed her problem solving skills. All the struggles and hard work finally paid off - Yun succeeded in identifying more than 50 previously unknown *mec-3*-dependent genes in addition to previously-identified genes. This work opened a new window for dissecting molecular mechanisms underlying the differentiation of touch cells and revealed an important DNA sequence needed for expressing touch receptor genes. Importantly, the technique developed by Yun provides a general way to analyze gene expression of individual cell types in any multicellular organisms.

After a very successful Ph.D., Yun joined Cori Bargmann's lab as a postdoctoral fellow to work on olfactory learning in *C. elegans*. In the past three years, she has made important findings regarding how *C. elegans* changes its behavior by interacting with food sources. She found that *C.*

elegans learns to avoid the odors of pathogenic bacteria by elevating the levels of serotonin in chemosensory neurons after previous exposure to the pathogens. This increase in serotonin then activates a serotonin-gated chloride channel in a small group of interneurons to promote the learning behavior. Yun and her colleague also found the involvement of a toll-like receptor gene (tol-1) in *C. elegans* avoidance of a pathogenic bacterium. Her studies have revealed some fundamental aspects of olfactory learning and identified the important role of serotonin in modifying functions of a specific group of cells in *C. elegans*. These important works establish a solid foundation for dissecting signaling pathways leading to up-regulation of serotonin and subsequent functional modification of olfactory circuits, which Yun plans to work on as an independent researcher.

Yun has been remarkably successful in both Ph.D. and postdoctoral studies, a testament to Yun's intelligence, technical skills and ability to succeed. On a personal note, Yun has a very pleasant personality and I always enjoyed talking to her. Based on my interactions with Yun in the past six years, I have no doubt that she will continue to be very successful in academia. I recommend her for the position with my highest enthusiasm.

Sincerely Yours,



Wen-Biao Gan, Ph.D.