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October 11, 2005

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

Dear Dr. Brun:

It is my pleasure to recommend YI WEI JIANG for a faculty position. For a span of two years during Yi Wei's postdoctoral work, he was a regular and active participant in my lab's group meetings and journal clubs. As a counterpart to his superb biochemical training at Stanford, Yi Wei wished to regularly meet with a group of yeast scientists to discuss and develop the genetic ideas related to his side-project on epigenetics, an idea that later became the focus of his lab. Although we may have helped him somewhat, his contributions to my lab far outweighed anything we did for him. He regularly provided astute criticism, fresh experimental ideas, and new ways of thinking about old problems. I have followed his work as a faculty member, and he has taken on a series of unconventional, but important, problems. He thinks very clearly and deeply about science, and all his work is highly original. On a more personal note, Yi Wei is a delightful person, full of energy and ideas, who is great fun to talk with. I can easily see him being an excellent advisor to students and postdoctoral fellows and a community-minded and high-spirited faculty colleague.

Sincerely,

Alexander D. Johnson, Ph.D.

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Oct. 12, 2005

Yves Brun
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Dear Dr. Brun,

Di Jiang has asked me to write a letter of recommendation. I am very happy to do so. Di has been a postdoc in my laboratory since 2001. Before entering my lab, Di had done a short postdoc Ajay Chitnis at NIH working on zebrafish neural development. Di heard me speaking at a conference in the summer of 2000 in which I presented results on our efforts on establishing the ascidian *Ciona* as a genetic model system. Di quickly realized the great potential of *Ciona* for studying chordate development and evolution. Ascidians, such as *Ciona*, are among the simplest extant chordates. The simplicity of ascidians can be seen at several levels: *Ciona* embryos contain many fewer cells and cell types than embryos of vertebrates; the *Ciona* genome is only about 5% the size of the typical vertebrate genome; and the number of genes is estimated to be about half that of the typical vertebrate. Di's recently published work on ascidian notochord development (which I will describe below) exemplifies the degree of sophisticated analysis that this possible with ascidians, and that is either not feasible, or much more difficult, in other chordate model systems, such as zebrafish or mice. At the time that Di joined my laboratory many of the techniques for *Ciona* genetics were in early development, and once coming to my, lab Di has been able to push the field forward at an incredible pace. For example, he recently published the first manuscript describing the positional cloning of an ascidian mutation.

Di's first project when entering to my laboratory came from his interest in vertebrate CNS development. In a small project that was aimed primarily with getting his feet wet with a new experimental system, Di isolated the ascidian ortholog of the *engrailed* gene and examined its expression by in situ hybridization. In vertebrates, engrailed is expressed at the junction between the mid-brain and hind-brain (MHB). To our amazement, Di found that the *Ciona* engrailed was expressed in two bilaterally opposed cells at what is called the "neck region" of the CNS. Thus it would appear that

the MHB junction of the *Ciona* nervous system consists of only two cells. In vertebrates the MHB is an important source of inductive factors that play an important role in pattering the CNS. To add further evidence for his hypothesis concerning the correspondence of the engrailed-expressing cells to the vertebrate MHB, Di showed that the same cells express the ortholog of the vertebrate Pax-2, 5 and 8 genes. Di's results highlight both the simplicity of the ascidian embryo, as well as the high degree conservation among chordate embryos.

After this first study Di made a very important observation. Researchers in my laboratory had just begun to screen for developmental mutants of *Ciona* using a chemical mutagenesis protocol. Di observed that the wild population of *Ciona* carried many interesting spontaneous mutations. Wild *Ciona* are available in the Santa Barbara area by the thousands. *Ciona* are hermaphrodites with the ability to self-fertilize. This means that one can screen for recessive mutations simply by collecting wild animals and inducing them to spawn eggs and sperm. The resulting embryos are then screened for mutations that occur at the expected Mendalain ratio. Di found that one could rapidly screen through hundreds of animals this way. To my knowledge, no other animal has been screened for pre-existing mutations to the degree that *Ciona* has been by Di. Using this route Di identified a number of interesting mutations, two of which he has studied in detail. Di identified the first of these mutants, *aimless*, because exactly 1/4 of the progeny from a wild animal had short tails. Di was able to outcross and propagate this line in the laboratory. Di quickly discovered that embryos homozygous for the *aimless* mutation had a defect in notochord development. In all chordates the notochord forms by a process called convergent extension (C/E) in which the developing notochord cells move to the midline to form a column. In *aimless* embryos C/E is disrupted. Di's efforts were key to developing techniques for positionally cloning mutant loci in *Ciona,* and with amazing speed was able to identify the *aimless* genetic lesion as being in the gene *prickle*, which is a component of the planar cell polarity (PCP) pathway. In further characterization of the *aimless* mutant Di made several observations that are of great significance for understanding chordate morphogenesis. First he observed that intracellular components of the PCP pathway are polarized in the axis of C/E, but not in *aimless* mutants. This type of polarization had not been observed before in chordates, and now Di had genetic tools to understand this better. A second and unexpected observation of Di's was that following C/E the notochord cells become polarized in second axis (the anterior/posterior axis), and that this polarization is also dependent on the PCP pathway. I think that this second observation of Di's exemplifies his enormous ability. Researchers have been looking at notochords for over a hundred years, but nobody had noticed this anterior/posterior polarization of the cells (which can be seen in unstained embryos). However, once it is pointed out it's obvious to anyone. This is an entirely new area that has great potential for understanding the development and evolution of chordates, and Di is the only one working on it (my lab will not continue in this area).

Di's other major recent project concerned an "albino" mutation that he discovered. Ascidians contain two prominent pigmented (melanized) cells in the CNS. The role of one of these cells is obvious. It serves to shield the photoreceptors from stray light. The other is found within the gravity sensing organ of the ascidian. It was not clear what role melanin was serving within this organ, and Di's mutants were ideal for testing the hypothesis that they play a role in gravity sensation. On his own, Di devised

ingenious behavioral assays to examine the swimming behavior of the wild type and mutant larvae. Di's published results are now the definitive treatment on this subject. He showed that the gravity sensing organ in the albinos was intact, albeit without melanin. However, the mutants did not shown the normal negative gravotropism. No other metazoan appears to use melanin in quite this way. These findings have important implications for the evolution of sensory structures.

I should close by giving my overall assessment of Di. He is one the anchors and stars of my group, and he will be impossible to replace. Among Di's strongest traits (and there are many) are his native curiosity and creativity. He is a researcher in the truest sense. Equally important is how Di combines his curiosity and creativity with an ability to focus on a problem and produce top-notch results. In my nine years at UC Santa Barbara I have had nine postdocs (including Di) work with me. If I had to rank them, I would have to place Di at the top. While I have worked with many talented people, none of them has had the combination of talents found in Di. I should also add the Di would make a wonderful colleague and mentor. His curiosity and enthusiasm are infectious.

Sincerely,

William Smith, Professor of Biology

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October 13, 2005

Dr. Yves Brun
Syst Biol/Microbiol Faculty Search
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RE: Application of **Dr. Di Jiang** for Assistant Professor position

Dear search committee members:

It is my pleasure to recommend Dr. Di Jiang for your advertised position for an Assistant Professor. Dr. Jiang has been a postdoctoral fellow here at UCSB in the Department of Molecular, Cellular and Developmental Biology and the Marine Science Institute since 2001, and I have come to know him fairly well during that time. I am sure that his advisor, Dr. Bill Smith, will comment specifically on Di's research, so I will limit my comments in that area to more general terms and focus on Di's excellent potential as a researcher and teacher.

Di has been working on the development of ascidians, particularly the development of the notochord, with a broader question of how the vertebrate nervous system might have evolved. He has framed his research questions carefully and is likely to make excellent progress in this area. He uses a nice combination of observational and comparative approaches with molecular techniques that can provide quite a bit of insight into a problem.

As you can see from his CV, Di has a very broad background in terms of his formal training in the life sciences. His command of the literature and salient problems in a wide variety of areas is nothing short of astounding. Di can be counted on to ask insightful, pertinent questions in journal clubs, seminars and during informal discussions on Friday afternoons over beer. Many students and faculty seek him out to discuss new ideas or to chat about a recent paper they have read or are trying to write. Di always seems to know the background literature, and in the rare case where he does not, he quickly picks up details and zeroes in on the key issues. One of the reasons that Di is so impressive in this regard is that his breadth and wide interests are complemented by his ability to focus on a problem at hand and to make progress on that problem. He is a hard worker and his deep thinking and scholarly perspective is a perfect partner for his experimental prowess. He is not afraid to tackle new techniques or new

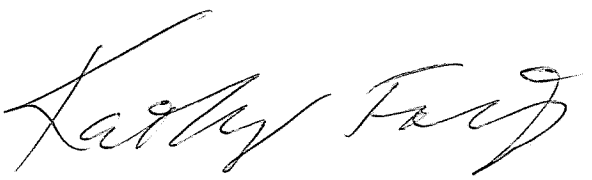
questions and it is very likely that in his career he will pursue directions of research based on where the data lead him.

Di's scholarly approach to science – really, a Renaissance approach – will come through in his teaching. While he has not had a lot of experience in this regard, his natural passion for science, his curiosity, and his commitment to "being a scientist" will lend themselves well to teaching. Students ought to respond to this approach – Di's excitement will be contagious. I have observed this in informal settings here, where Di has been interacting with and mentoring younger graduate students. His written and spoken command of the English language are excellent. I say this based on having reviewed drafts of his manuscripts and hearing him speak in formal and informal settings.

Di is "always in the lab" and I have lost track of how many times (too numerous to count!) that he has popped into my office or lab to show me some new result or to discuss a paper or new observation. Actually, I am really going to miss him when he leaves – it is a real pleasure to have a colleague who just loves biology for the sake of biology and who is constantly learning and exploring. His enthusiasm is infectious and his energy limitless. As you are probably aware, UCSB is a wonderful place to work on marine invertebrates (our campus sits right on the Pacific ocean) and one of the first things Di did when he arrived as postdoc was to sit in on our undergraduate classes in invertebrate zoology. These courses are taught by Dr. Armand Kuris and Di figured out immediately that this would be the quickest way to come up to speed on the local invertebrates. He has become an expert on local ascidian species since arriving here and has played an important role in establishing the methodologies for genetic approaches in this organism. As a specific example of this, Di has made some important and interesting observations regarding self-fertilization in a local ascidian species and had a recent paper in the journal *Biological Bulletin* describing these results.

In summary, I think that Di Jiang will make a wonderful faculty member and colleague, and I give him my highest recommendation. In fact, I'd be happy to have him as a colleague here at UCSB. If you have any questions, please feel free to contact me.

Sincerely,



Kathy Foltz