DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

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Re: Hideo Tsubouchi

I write this letter of recommendation for Hideo Tsubouchi with enthusiasm. Hideo has long been a significant contributor to the field of meiotic recombination, and he will certainly continue to make important contributions in the future. He is intelligent and articulate, and would do credit to the faculty of any research university.

I first met Hideo when he was still a graduate student in Hideyuki Ogawa's group in Osaka. Hideyuki's thesis research, which he continued afterward, was to examine the role that various nucleases play in meiotic recombination, specifically in the processing of the ends of the double-strand breaks (DSBs) that initiate meiotic recombination. Through a combination of genetic and molecular biology approaches, Hideo showed that the Mre11 nuclease activity was essential for the initial processing of DSB ends; he also showed that another exonuclease, Exo1, played an important though not essential role in subsequent DSB end processing. This work had an important impact on thinking about meiotic recombination mechanisms.

Since joining Shirleen Roeder's laboratory as a postdoc, Hideo continued his studies of meiotic recombination, but with a focus on the recombinase activities that promote homologous recombination through double-strand break repair. In a series of important papers, Hideo has helped to define the ensemble of proteins (Hop2p, Mnd1p, Mei5p and Sae3p) that act as cofactors for Dmc1p, the meiosis-specific RecA homolog that actually does the biochemical business of meiotic recombination. Using a combination of genetic, molecular, and cytological approaches, Hideo helped define the distinct roles that the Hop2/Mnd1 and Mei5/Sae3 protein complexes play in promoting and regulating Dmc1-mediated recombination; he has also isolated a meiosis-specific gene whose product seems to specifically repress the Rad51-mediated mitotic recombination system during meiosis. In addition, I'm close enough to the Roeder lab to know that much, if not all, of the direction for this work came from Hideo himself. This work is likely to illuminate the mechanism and regulation of DNA repair by homologous recombination in all cell types, especially in light of recent evidence that the meiotic cofactors of Dmc1p have homologs that appear to act in vegetative cells. Thus, Hideo's research will not just tell us about how breaks are repaired in meiosis, but will tell us about how homologous recombination acts to repair damage in mitotic growth as well.

Hideo's most recent work is a very exciting new story involving Hed1, a protein expressed in meiosis that appears to specifically inhibit Rad51 recombinase activity in favor of the meiosis-specific Dmc1 recombinase, and thus most likely helping to promote recombination between homologs. By himself and with collaborators that he recruited, Hideo brought genetic, cytological and biochemical approaches to characterizing this protein and its activities.

I hope that I've managed to convey to you the value I place on Hideo Tsubouchi's contributions, and the respect I have for his accomplishments and his abilities. If the past is any guide, Hideo will be successful in establishing an independent research program, and he will make important contributions for the foreseeable future. Hideo will also be a good colleague; he is intelligent and articulate, with excellent written and oral communication skills, and his open and friendly manner will make him a good person to have as a colleague.

Should you have any further questions, please do not hesitate to contact me.

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