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To the NIGMS F32 study session:

I am writing in support of John Desmarais’ application for a Ruth L. Kirschstein National Research Service Award for an Individual Postdoctoral Fellowship (F32). Since 2018, I have collaborated with John on two projects and **SOMETHING HERE!!!!**. I recommend him for this fellowship with great enthusiasm.

During our collaborations John has displayed the skills and drive important to become a successful independent researcher. He has repeatedly demonstrated his ability at statistical methods, computational modeling, and science communication. Beyond this, John displays scientific integrity and collaborative spirit that will greatly aid his future endeavors.

As part of our response to the emergence of the SARS-COV2 pandemic, the Innovative Genomics Institute put together an interdisciplinary team of researchers to investigate methods of improving CRISPR based diagnostics to meet the challenges of the time. This team included researchers from across a wide variety of specialties and from multiple institutions including UC Berkeley, UCSF, the Gladstone institutes, and others. John joined the team to lend his expertise at modeling, statistics, and data analysis. As part of this effort, he collaborated closely with researchers across multiple projects and specialties analyze their experimental results, rapidly update our theoretical understanding of the system, and use that theory to guide new experiments to overcome limitations in our diagnostics. In the process demonstrating an ability to work quickly on fast moving projects and coordinate effort in large collaborations. All while maintaining his independent thesis research separately.

During this collaboration, John also demonstrated his science communication skills repeatedly. In order to maintain coordination on a team of this size, we organized weekly meetings where all collaborators would present their findings from the week to the entire team. These meetings required presenting findings to a group of mixed experimentalists and theorists from across a variety of fields. John described modeling results and statistical results making his findings accessible to the entire team. This enabled rapid improvement of our designs through incorporation of model guided design.

These results included using modeling to test mechanistic explanations of our experimental results

demonstration that cas13 dependent sequestration of guide and target through release of guide-target duplex instead of