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Bayer Crop Science   September 14, 2019

Dear hiring committee,

As a researcher with a background in plant breeding, I have spent the last seven years using genomics and statistics to understand the genetic basis of complex traits and how this information can be used to increase genetic gain. The aspects of this work I enjoy most are learning from diverse collaborators, generating cross-disciplinary insights into plant breeding, and the opportunity to support food security. Continuing this work in a Discovery Scientist role would be both a great fit for my scientific interests and an exciting opportunity to contribute to the development of novel plant breeding methodologies.

During my PhD research, I focused on understanding the genetic basis of carrot shoot growth. Using a diallel mating design and genetic mapping, I established baseline estimates of heritability, combining ability, and genetic architecture for multiple traits. By collaborating with computational biologists, I also increased the efficiency of trait measurement by developing an image-based phenotyping platform for carrot morphology. My background in plant breeding gives me a unique appreciation for the nuances of field trialing and data collection that will be beneficial in a Discovery Scientist role, which will require cross-talk with breeders and geneticists.

In my current position as a postdoctoral researcher, I am studying the genome-wide influence of selection in *Brassica oleracea*. During this time, I have focused on expanding my skills in bioinformatics and genomics to explore how principles from population genetics can be translated to breeding strategies. The topics I've been most interested in are the role of demographic history in shaping genetic architecture and the use of genomic prediction to test biology-guided hypotheses. As part of this goal, I have also established collaborations with researchers across plant systematics, population genetics, quantitative genetics, and plant biochemistry.

Over my research career, I have implemented data driven, open-source solutions into my research and actively developed new skills to achieve these goals. A Discovery Scientist role at Bayer would be an ideal opportunity to apply my existing knowledge, to explore new methods, and to have a meaningful impact on crop improvement.

Thank you for your time and consideration.

Sincerely,

Sarah Turner-Hissong