



DEPARTMENT OF BIOLOGY

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Dear CCUBC Undergraduate Paper Award Committee;

This letter is to support the application of Isabeau Lewis for the CCUBC Undergraduate Paper Award, for her paper: "Kin discrimination causes plastic responses in floral and clonal allocation" published in the Proceedings of the Royal Society, Series B in January 2025. I was Isabeau's supervisor for her undergraduate research and Honour's thesis. Isabeau completed her Hons. BSc. with Distinction at Queen's University in 2023, with a Major in Biology and Minor in French. Isabeau began working in my lab as a summer research student after her second year and quickly demonstrated her deep commitment to research, her independence and motivation. During her third year, she conducted independent research through a mentorship experience. Together we conceived of a project, and Isabeau independently carried out the research, analysed the data, and wrote the manuscript. For this research, Isabeau won the Best Poster award at the Ontario Ecology, Ethology and Evolution Colloquium in May 2022. The work was recently published; with Isabeau as first author.

The study provides novel and exciting findings about kin discrimination and competitive interactions in plants. While kin recognition and altruism are well established in animals, they are much more contentious in plants, and empirical demonstrations of kin discrimination are still quite scarce. However, research is slowly accumulating that demonstrate the capacity for plants to adjust their growth in response to their neighbour's identity. Our research is unique in that we investigate responses in both clonal allocation and floral investment, and add convincing evidence that plants can sense their neighbours' identity and respond appropriately. Through a well-designed greenhouse experiment, Isabeau's research shows that plants neighbouring kin reduce flowering and clonality to minimize competition and potential inbreeding between relatives. This aligns with theoretical predictions that kin selection allows related plants to collectively benefit, even if individual plants sacrifice some personal fitness. Overall, the study challenges the traditional view of plants as passive organisms, and shows that kin-specific responses can shape the growth and structure of plant neighbourhoods.

A first author paper for an undergraduate student is always a significant achievement. This paper goes beyond that by being a stand-alone experiment that was not part of a larger collaborative project, and being published in a highly-respected, top-rated journal. In addition to the nominated paper, Isabeau conducted a separate project for her Honour's thesis, currently being written up for publication. Throughout her time in my laboratory as an undergraduate student, Isabeau

received several awards for her research, including the Botanical Society of America Undergraduate Student Award, NSERC USRA fellowships, QUBS J. Allen Keast award for fieldwork, and awards at conferences for presentations (e.g. the Canadian Society for Ecology and Evolution conference second place for Best Talk; Ontario Biology Day award for Best Presentation). She then received an NSERC CGS for graduate school, and is currently conducting Master's research. The high calibre of the nominated paper, as well as Isabeau's academic contributions and research excellence as a BSc student at Queen's, make her a very strong candidate for CCUBC Undergraduate Paper Award.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Jannice Friedman", with a long horizontal flourish extending to the right.

Dr. Jannice Friedman
Associate Professor