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Corn-on-a-chip: Mini-channel Device for Corn Root Growth¹ KEVIN KREIS, SANGJIN RYU, University of Nebraska-Lincoln — Plant growth heavily relies on interactions between the root and the soil environment, but it is impossible to observe such interactions because of opaqueness of soil. Microfluidics has been successfully utilized to monitor the root growth behaviors of Arabidopsis. In this study we have chosen Maize as a model plant because of its economic significance, and aim to develop transparent mini-channel devices accommodating the root growth of corn seedlings in a controlled environment. To mimic aspects of the soil environment, we try to impose concentration gradients of key chemical ions to the growing root using the device, and to investigate how the root responds to the applied stimuli.

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