日本学術振興会に紙媒体で提出する必要はありません。

様　式　Ｆ－７－２

科学研究費助成事業（学術研究助成基金助成金）実績報告書（研究実績報告書）

機関番号	１４６０３

所属研究機関名称		奈良先端科学技術大学院大学
研究代表者	部局	研究推進機構
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１．研究種目名　若手研究　　２．課題番号　19K16168

３．研究課題名　Changes in cellular dynamics of cellulose synthases during secondary cell wall production

４．補助事業期間　令和元年度～令和２年度

５．研究実績の概要

We have submitted a draft manuscript on one of our related research projects. This project has looked at the role of a protein closely associated with cellulose synthesis, but who's function is still unknown, especially in plant secondary cell walls. Our paper presents data supporting the hypothesis that this protein is important for controlling the speeds at which enzymes produce cellulose. This may cause the defects in the crystallinity of the cellulose being produced when the protein is absent, resulting in the decrease in cellulose strength but not quantity. We are currently awaiting response from reviewers.

We have created several photo-convertible fluorophore tagged cellulose synthase enzymes and tested their efficacy in plants. So far we have determined that though some of these fluorophores are viable in bacteria, yeast and mammalian systems, they are not viable in plants due to their weak signal and potential for dimerizing prematurely causing artifacts. We have however identified several that would work for our goals of visualizing the cellular dynamic turnover of cellulose synthase enzymes and are currently developing research questions with such tools including determining enzyme residency within Golgi bodies.

Our experiments have showed negative data for the presence of lipid microdomains within the plasma membrane surrounding developing secondary cell walls. This data infers that there are no such domains and we are currently seeing if we can combine the data to publish in a short paper.

６．キーワード

Cellulose　Plant Cell Wall　Plant Cell Biology　Molecular Biology　Microscopy　Secondary Cell Walls

７．研究発表

〔雑誌論文〕　計0件

〔学会発表〕　計2件（うち招待講演　2件／うち国際学会　0件）

１．発表者名
Yoichiro Watanabe

２．発表標題
Utilizing High-Resolution Live Cell Imaging to Elucidate the Cellular Mechanisms Controlling Plant Cellulose Deposition

３．学会等名
University of Tokyo - Invited Speaker for Cutting Edge Research Workshop（招待講演）

４．発表年
2020年

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1版

１．発表者名 Yoichiro Watanabe
２．発表標題 High-Resolution Live Cell Imaging of Developing Plant Protoxylem Reveals a Complex Mechanism Controlling Cellulose Deposition During Secondary Cell Wall Synthesis.
３．学会等名 The 12th National Convention of the Philippine Society for Developmental Biology（招待講演）
４．発表年 2020年

〔図書〕　計0件

８．研究成果による産業財産権の出願・取得状況

計0件（うち出願0件／うち取得0件）

９．科研費を使用して開催した国際研究集会

計0件

１０．本研究に関連して実施した国際共同研究の実施状況

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１１．備考

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