

***Research Internship in
University of Saskatchewan
Jul. 26, 2012-Aug. 18, 2012***

**Science of Cryobiosystems
Daisuke Takahashi**

トピック Today's Topics

インターンシップの目的

The purpose of internship

サスカチュワン大学について

The University of Saskatchewan

インターンシップでの経験

1. シンクロトロン *Synchrotron*
2. パッチクランプテスト *Patch-clamp technique*

カナダでの休日

Holidays in Canada

インターンシップを終えて気づいたこと

New findings in this internship

インターンシップの目的 *The Purpose of Internship*

Mid-IR ビームラインを用いた細胞の成分組成の解析
Compositional analysis of plant cells using Mid-IR beamline

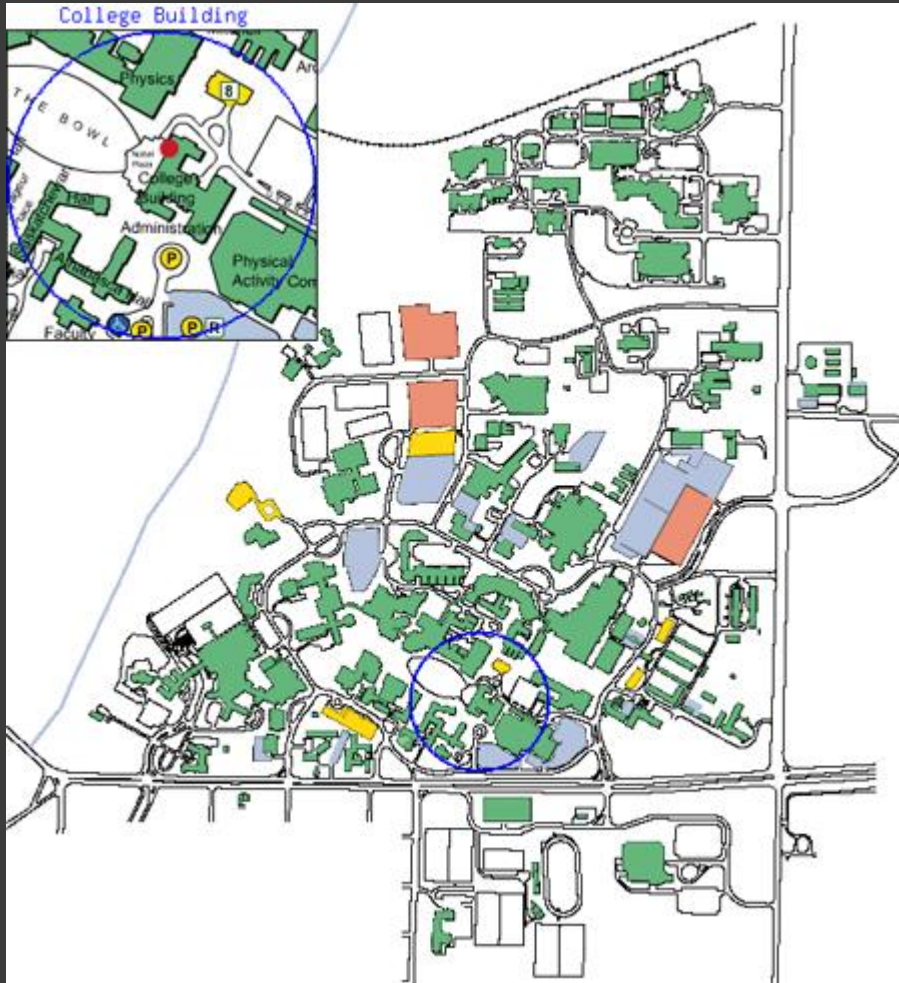
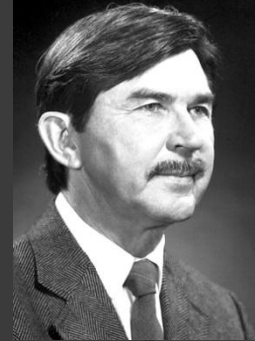
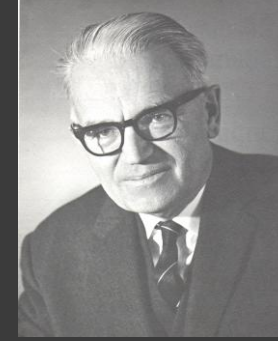
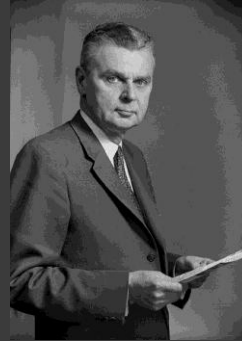
Patch-clamp法の植物細胞への応用
Application of patch-clamp to plant cells

他の研究者や英語話者とのコミュニケーション
Communication with researchers and English speakers

カナダにおける博士課程学生の生活様式について学ぶ
Learn about life style of PhD students in Canada

サスカチュワン大学 *The University of Saskatchewan*

Researchers and alumni

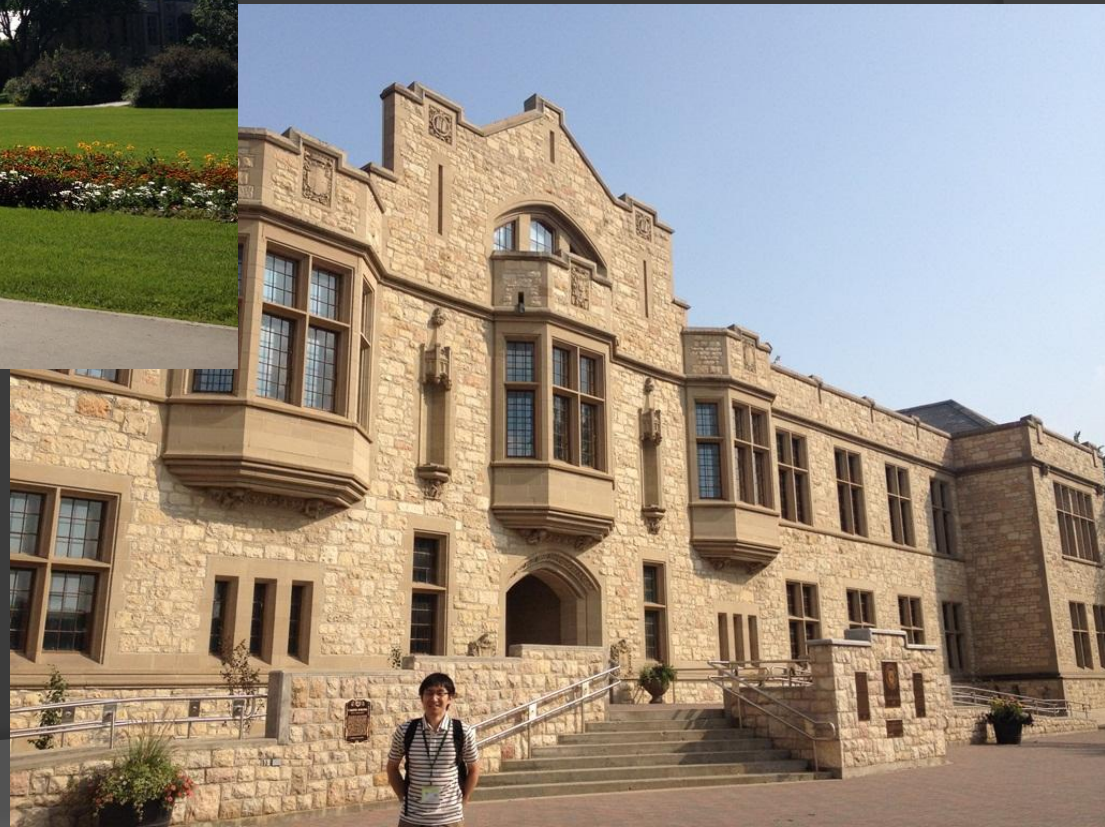


Student headcount (2011/2012)

Graduate Studies	2892
Non-degree Program	648
Post Grad Clinical	379
Undergraduate	16575
Total	20494

Domestic	18463
International	2021
College (Agriculture and Bioresources)	1063

大学構内 Campus



大学構内 Campus



大学施設 Facilities



大学寮 Student Residence (Saskatchewan Hall)



インターンシップでの経験 *New Experience in Internship*

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訪問先指導教員 *Host professor*



Dr. Karen K. Tanino, Professor

College of Agriculture and
Bioresources

Expertise: environmental stress
physiology

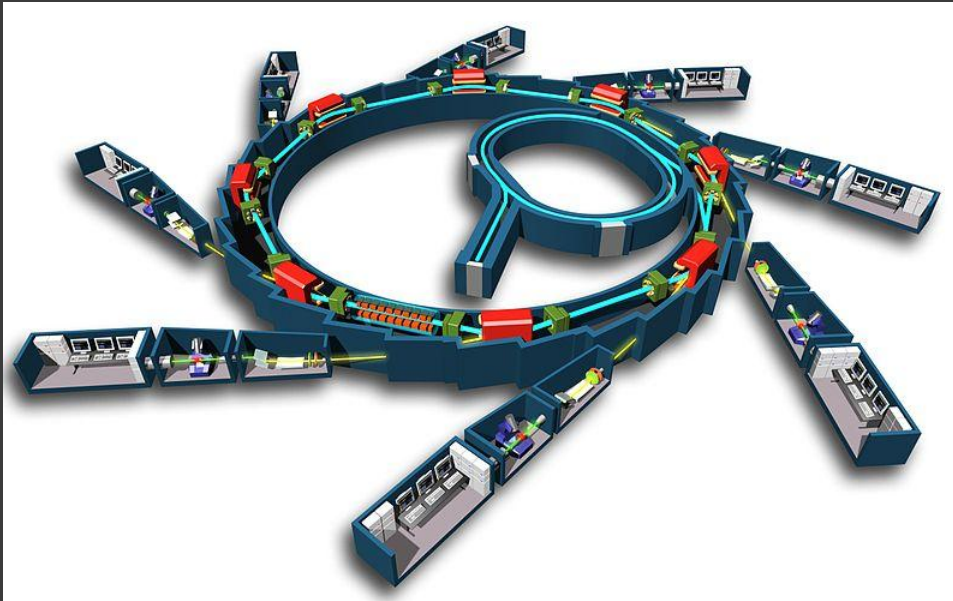


Dr. Matthew Loewen, Assistant
Professor

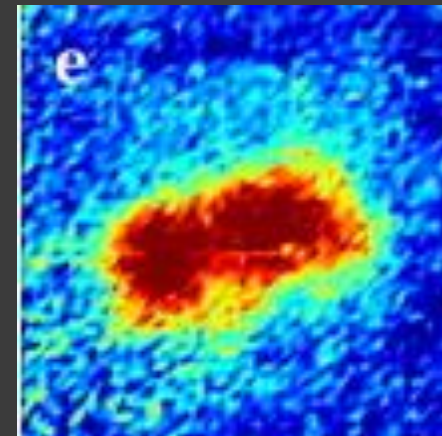
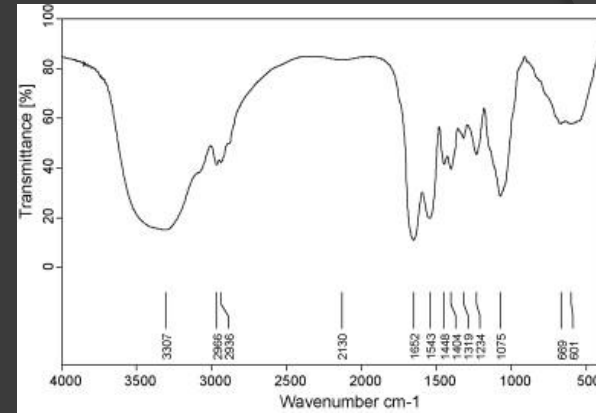
College of Veterinary Medicine

Expertise: Veterinary Physiology

Synchrotron Radiation and Microscopic Analysis of Plant Cells



<http://en.wikipedia.org/wiki/Synchrotron>

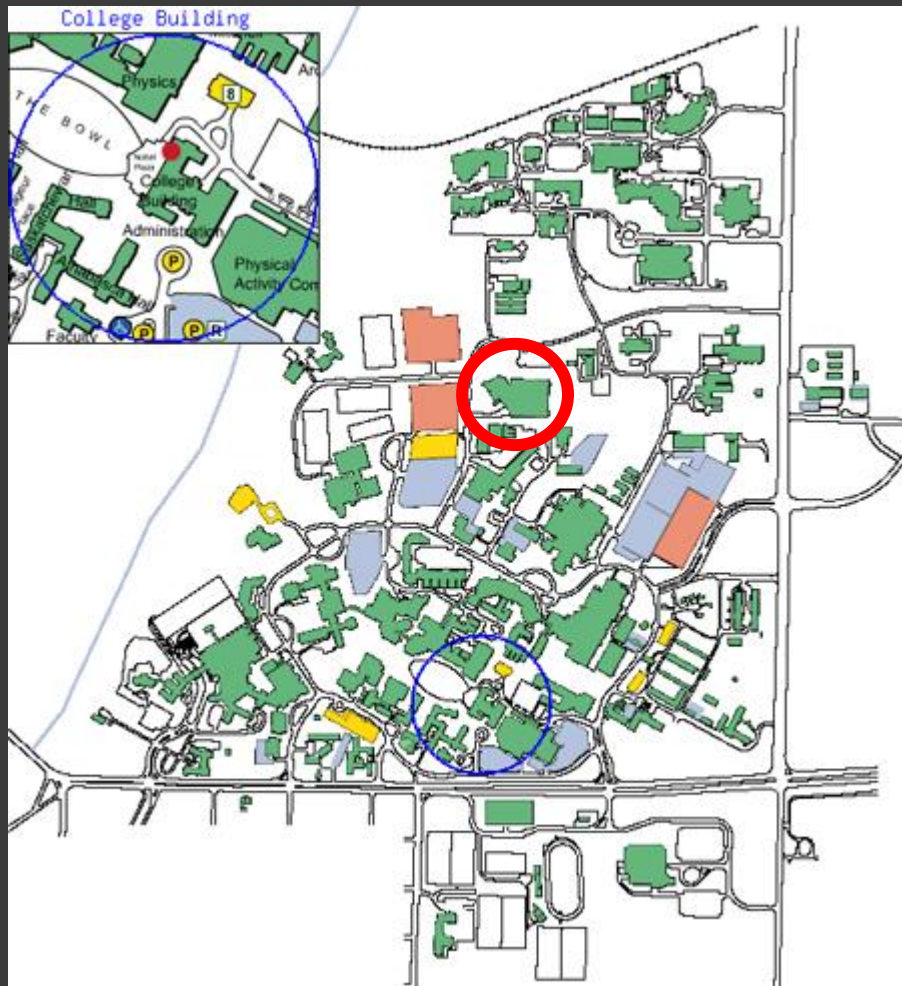


Nasse et al., 2012

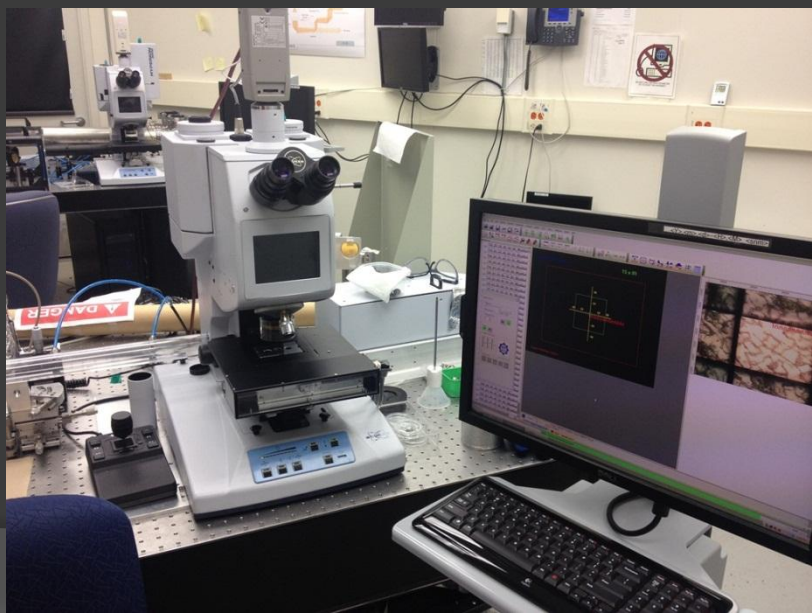
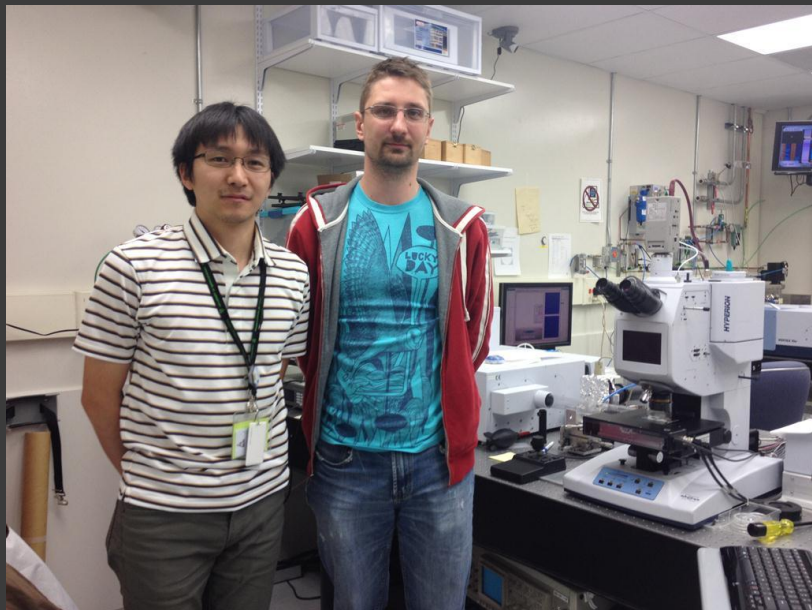
Synchrotron generates high brilliance radiation beam.

Mid-IR beamline allows to analyze distributions of chemical structures on single plant cells.

Canadian Light Source (Synchrotron Light Source Facility)



Canadian Light Source (Synchrotron Light Source Facility)

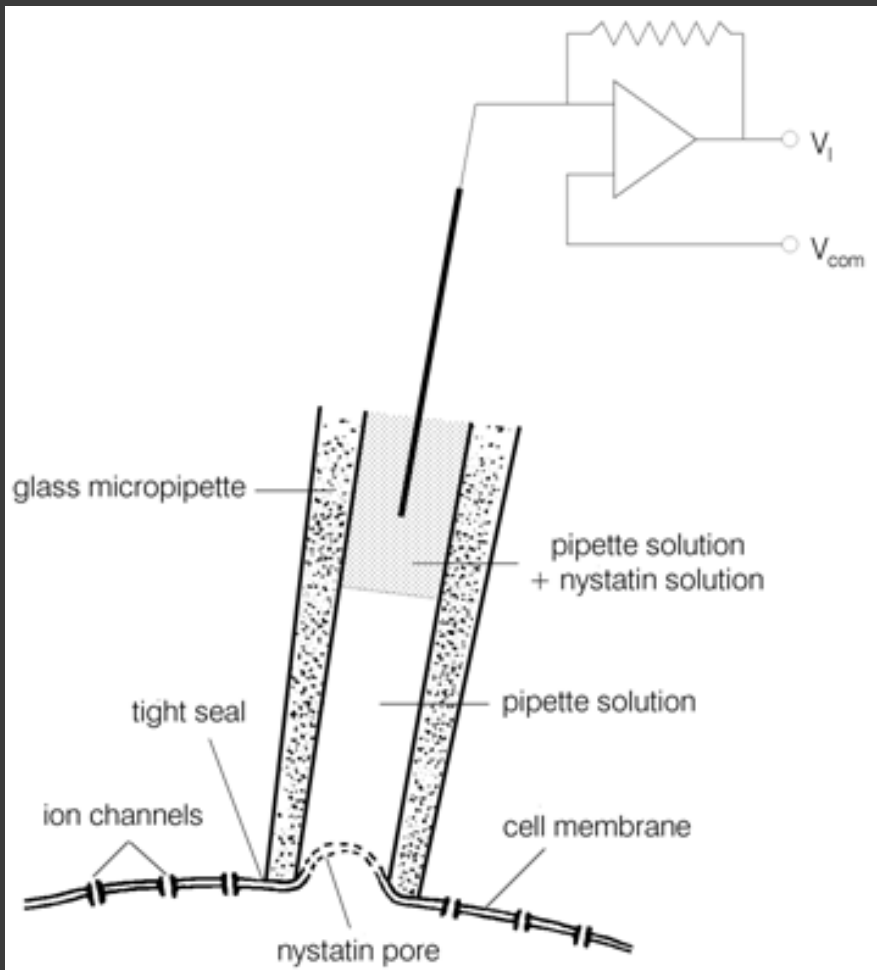


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The application of patch-clamp to plant cells

Patch-clamp Test for Plant Protoplast Cells



<http://patch-clamp.info/techniques/techniques.htm>

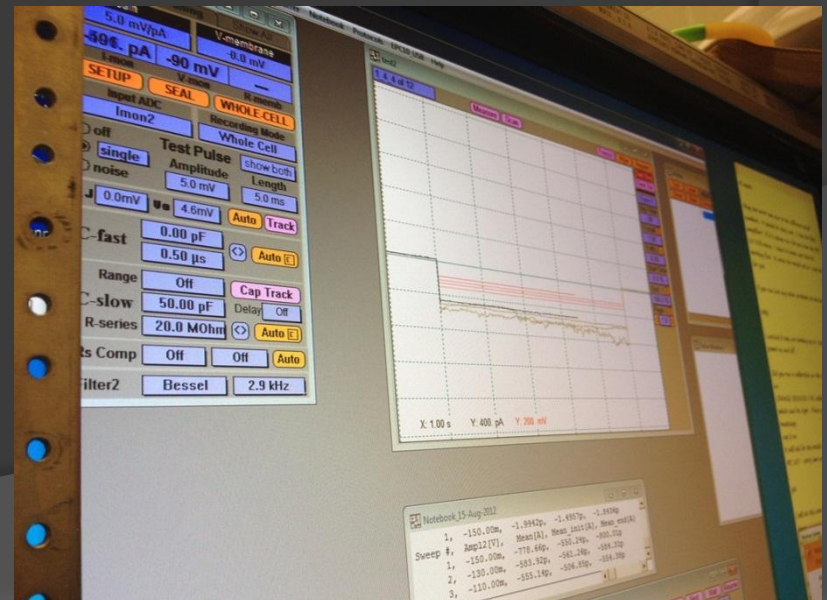
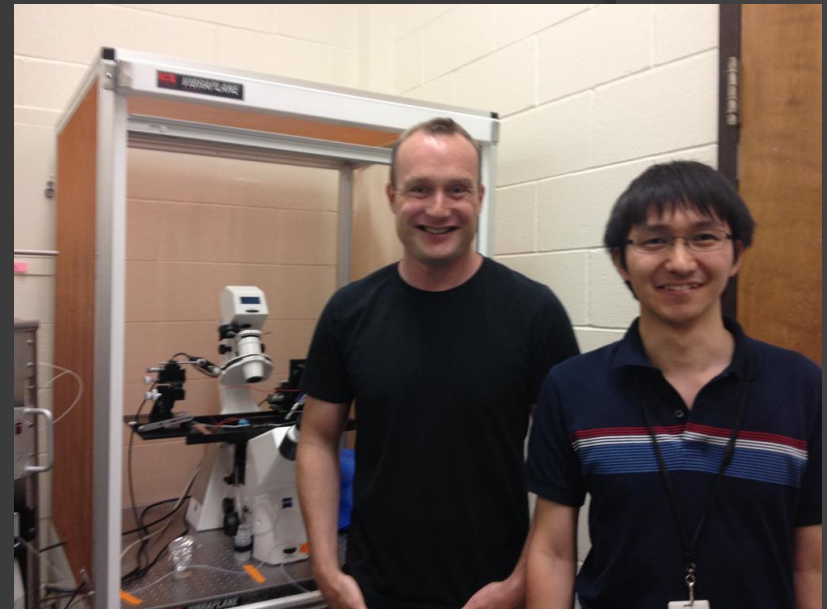
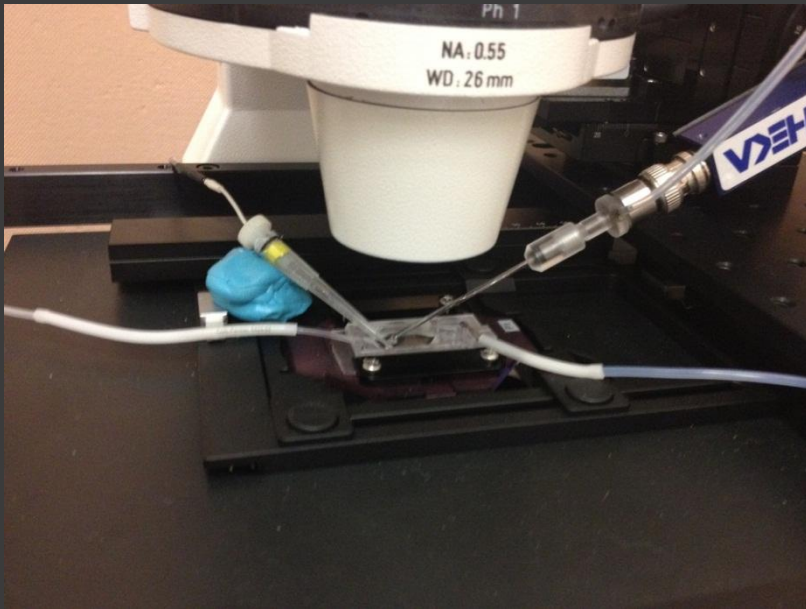


<http://www.nkato.biology.lsu.edu/methods/protoplastisolation.html>

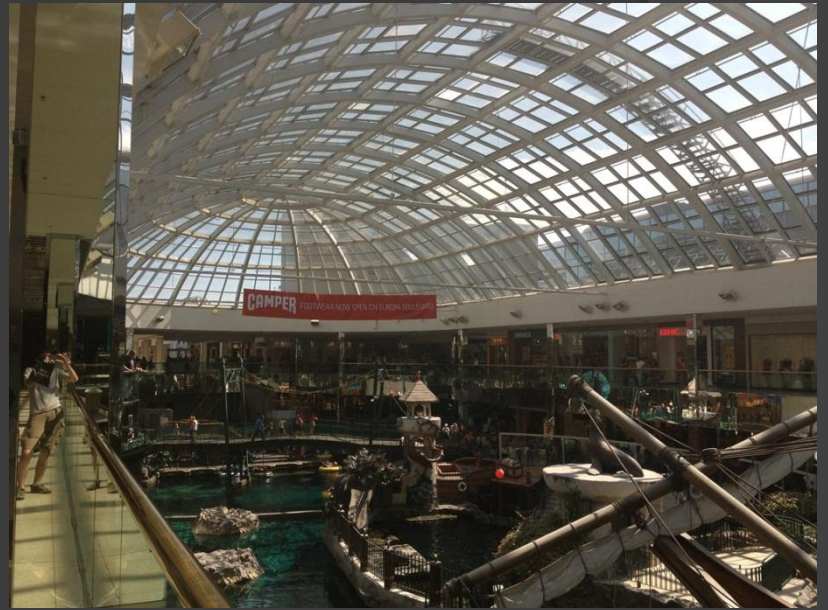
Patch-clamp technique allows to quantify ion channel opening on plasma membrane.

The most important thing for the success of this experiment is sealing between micropipette and plasma membrane.

Patch-clamp Test for Plant Protoplast Cells



休日 Holidays



休日 Holidays



気づいた点 Findings

カナダの学生は公私の区別がしっかりとついている
Canadian students draw a line between public and private

研究室内で専門家としての能力を求められる
They acquire specialist skills in the lab

いろんな研究者と、研究に関するコミュニケーションがある
They have a opportunity to communicate with various researchers