

S M Abdul-Awal

Associate Professor
Biotechnology & Genetic Engineering Discipline
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EDUCATION

2011 – 2015 **Churchill College, University of Cambridge, UK**
Ph.D. Plant Sciences - The Islamic Development Bank funded in partnership with Cambridge Commonwealth Trust. **Alex Webb's Group.**

Identification of ADP-ribosyl cyclase in Arabidopsis: Investigation of the activity of ADP-ribosyl cyclase and its role in the circadian clock and in the stress signalling pathways in Arabidopsis. Developed three different methods to assay the activity and screened 35 clock mutants for ADP-ribosyl cyclase activity, $[Ca^{2+}]_{cyt}$ oscillation and $[Ca^{2+}]_{cyt}$ level. Identified the regulators of ADP-ribosyl cyclase through pharmacological studies and biochemically characterised the enzyme. Partially purified the protein through classical biochemical approaches and developed affinity column in collaboration with Dr Cann (Durham) to explore the sequence through mass spectrometry.

2007-2009 **Katholieke Universiteit Leuven, Belgium**
Master of Molecular Biology (Cum Laude) - Belgium Government funded.

One year research project, based in the Department of Biology - **Mechanism and modes of application of systemic RNAi in Insects:** Investigation of exogenous injection of dsRNA to down regulate the acetylcholine esterase (AChE) and nicotinic acetylcholine receptor (nAChR) in insects. Resequenced all ESTs of AChE & nAChR to verify the consensus sequence. Designed primer and applied sense and antisense primer in PCR reaction to generate a transcription template for the production of dsRNA. dsRNA was used for injecting experimental animal and the effect of RNAi was analysed by RT-PCR.

1999-2004 **Khulna University, Bangladesh**
B.Sc. in Biotechnology and Genetic Engineering (Distinction, Position: 1st)

Final year laboratory project, based in the Sugarcane Research Institute, Bangladesh- **Regeneration and Agrobacterium-mediated genetic transformation of Sugarcane (*Saccharum officinarum*).**

PUBLICATIONS

1. **S. M. A. Awal**, Carlos T. Hota, Matt Davey, Alison M. Smith and Alex A. R. Webb (2015). NO-mediated $[Ca^{2+}]_{cyt}$ increases are dependent on ADP-ribosyl activity in Arabidopsis. *In preparation* (Target Journal: Plant Physiology).
2. Maria del Carmen M. R., **S. M. A. Awal**, T. Hearn, M. J. Haydon and Alex A. R. Webb (2015). The Arabidopsis circadian clock contains a calcium switch. *In preparation* (Target Journal: The Plant Cell).
3. M. N. Hasan, A. Ansari, M. S. Z. Shahriar, M. N. K. Azam and **S. M. A. Awal** (2011). *In Vitro* seeds germination and plantlets development of *Silvius appendiculatus* (Orchidaceae). Int. J. Sustain. Crop Prod., 6(2): 1-5.
4. F. Akter, **S. M. A. Awal** and S. M. M. Rahman (2009). Effect of growth regulators on *in vitro* multiplication of Dianthus (*D. chinensis*). South Asian Journal of Agriculture, 4 (1&2): 116-122.
5. **S. M. A. Awal**, M. J. Alam, M. R. Ali, M. N. Hasan, M. S. R. Basunia and S. M. M. Rahman (2005). *In Vitro* propagation of pointed gourd (*Trichosanthes dioica* Roxb.) from shot tips. Biotechnology, 4(3): 221-224.

6. M. A. Hossain, S. M. A. Awal, S. K. Paul, M. R. Ali, M. A. S. Miah and K. M. Nasiruddin (2003). Regeneration and Agrobacterium mediated genetic transformation of Sugarcane (*Saccharum officinarum*). Journal of Agricultural Biotechnology, 1(1&2): 39-47.

RESEARCH & IT SKILLS

- Spectrophotometric enzymatic assays
- Extraction and purification of plant proteins using affinity chromatography and a number of other purification techniques, In gel assay, Native- and SDS-PAGE, immunoblotting, ELISA and EMSA
- Circadian clock: Plate Reader, Luminometer, Photek ICCD225 photon-counting camera system
- Molecular biology: Isolation and analysis of plant and bacterial DNA, RNA and proteins, cloning, PCR, RT-PCR, DNA sequencing
- Bacterial and plant transformation
- Bioinformatics: BLAST, ClustalW, EST database, VectorNTI, R (Completed a course in Bioinformatics as a part of master programme)
- Computing & Statistics: MS Word, Excel, PowerPoint & outlook, Adobe illustrator, Image J, Sigma Plot, BRASS, IndiGo, Inkscape

SELECTED TALKS & CONFERENCE PROCEEDINGS

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| October 2014 | Guest Seminar, Vrije Universiteit Brussels, Belgium.
'cADPR forms an additional loop in the Arabidopsis circadian clock' |
| July 2014 | International Conference on Arabidopsis Research (ICAR), UBC, Canada.
'The regulation of cyclic ADPR production by the Arabidopsis circadian clock' |
| June 2014 | Friday seminar series. Department of Plant Sciences, University of Cambridge.
'CCA1 regulates $[Ca^{2+}]_{cyt}$ through the ADP-ribosyl cyclase activity in Arabidopsis' |
| April 2014 | Islamic Development Bank Scholar's Symposium, University of Cambridge.
'NO regulates ADP-ribosyl cyclase activity in Arabidopsis' |
| October 2014 | International Conference on Novel Enzyme, Gent, Belgium. poster presentation;
'Identification of ADP-Ribosyl Cyclase in Arabidopsis' |

TEACHING EXPERIENCE & PUBLIC OUTREACH

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| 2013-2015 | Teaching Laboratory Demonstrator for Biology of Cells, Physiology of Organisms etc., University of Cambridge. |
| 2005-present | Lecturer, Khulna University, Bangladesh.
Laboratory Project Supervisor for final year undergraduate and M.Sc. students at Khulna University, Bangladesh. |
| 2013 | Cambridge University Science Fair Volunteer |

SCHOLARSHIPS & AWARDS

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| 2014 | Churchill College Graduate Fund Travel and Research Grant - Application made for travel to International Conference on Arabidopsis Research-2014 (ICAR-2014), Canada. |
| 2014 | Cambridge Philosophical Society Travel and Research Grant - Application made for travel to International Conference on Novel Enzyme, Belgium. |
| 2013 | Best Poster Presentation Award, Research day, Department of Plant Sciences, University of Cambridge. |
| 2000-2004 | Khulna University Merit Scholarship - Award made for academic excellence all through undergraduate level. |

LANGUAGES

- Fluent in English, studies from undergraduate to PhD are undertaken and examined in English. Proficient in Bengali and Hindi. Successfully completed ESOL & IELTS exam.

INTERESTS & ACTIVITIES

July 2015 Attended a 3-day, fully paid, team building course, Cambridge GRADschool
2011-2015 Cambridge University Bangla Society member & Churchill College MCR member

REFEREES

Professor Alex Webb Department of Plant Sciences, University of Cambridge, Downing Street,
(PhD Supervisor) Cambridge, CB2 3EA, UK, +44 (0) 1223333948, E-mail: aarw2@cam.ac.uk

Professor Alison Smith Department of Plant Sciences, University of Cambridge, Downing Street,
(PhD 2nd Supervisor) Cambridge, CB2 3EA, UK, +44 (0) 1223333952, E-mail: as25@cam.ac.uk

Professor J. V. Broeck Department of Biology, Katholieke Universiteit Leuven, Belgium. +32 (0)
(Master Supervisor) 16323978, E-mail: jozef.vandenbroeck@bio.kuleuven.be