

Dr. Hesham Mohamed El Sayed Abd El Halim

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Current Position And Contact Address

**Lecturer of Entomology, Department of Entomology, Faculty of science,
Benha University, Benha, Qalubia, Egypt- postal code 13518.**

Experience

- PhD joint supervision student to complete a joint research project between, Benha University- Egypt and School of Biology, Devonshire Building, Newcastle University, Newcastle Upon Tyne, NE1 7RU, UK from 30/5/2013 till 30/5/2015in UK.
- Worked as faculty/staff in Entomology Department, Benha University, Egypt till now.
- Worked as assistant lecturer, Entomology Department, Benha University, Egypt, July 2010 till now .
- Master of science, Entomology, Benha University, Egypt, July 2010 .
- Worked as demonstrator, Entomology Department, Benha University, Egypt, February 2004 till June 2010.
- Bachelor of science, Entomology, Benha University, Egypt, May 2003.

Research Interests

Molecular Biology, Genomics, Entomology, Insect Control, Physiology, Sequence Analysis, Chitinase, Biopesticides, Gene expression, RNA interference (RNAi), Insect Pests, Plant Protection, Insect.

Teaching Interests

Taught lab section of a variety of courses which include: Insect Morphology, Insect anatomy, Insect Taxonomy, Insect Pest Management, Biology, Cell and Molecular Biology, Physiology, Biochemistry, Biotechnology, Toxicology, Insect physiology, and Ecology of Insects. For each of those courses my responsibility included full preparation of teaching materials, organizing syllabus, preparing a lab manual, Lecturing, writing and grading exams, designing and illustrating lab experiments, and supervising and assisting students during laboratory sessions.

Academic Achievements

BSc in entomology

Benha University, Egypt 1999-2003
Major: Biological Sciences
Minor: Entomology, Grade: Very good.

MSc in Entomology

Benha University, Egypt 2005-2010

Major: Entomology
Minor: Molecular Entomology
Main supervisor: Prof. Mohammed H. Awwad
Thesis title:

Biological and molecular aspects induced by different IGRs on *Spodoptera littoralis*
(Bosid) (Lepidoptera:Noctuidae).

through my involvement in research for over 5 years I have used several Biological and Biochemical techniques that include but not limited to: Insect colony maintenance specially cotton leafworm and mosquito. Insect growth regulators and their application to insects. Morphological, Biochemical, physiological and molecular changes in insects in response to insect growth regulators. Familiar with several techniques commonly used in the study of insect bioassay and toxicology.

PhD in Molecular Entomology

Benha University, Egypt December 2012- December 2016.

Primary advisor: Prof. Angharad M. R. Gatehouse (Newcastle University).

Co-advisors: Dr. Martin Edwards (Newcastle University), Prof. Mohammed H. Awwad (Benha University) and Prof. Elham M. Salama (Benha University).

Thesis title:

RNA interference of sodium ion channels as a novel approach to control of insect
pests: proof of concept.

During my PhD I spent 2 years (from 30/5/2013 to 30/5/2015) working in the laboratory at Newcastle University, Prof. Angharad M. R. Gatehouse research group as a joint supervision student under channel scheme collaboration between Benha university-Egypt and Newcastle University-UK, funded by Cultural Affairs & Mission Sector, ministry of Higher education.

WORK EXPERIENCE

PhD Candidate:

Newcastle Institute for Research on Sustainability, School of Biology, Newcastle University, UK.

I have been studying for my PhD degree and working closely with Prof. Angharad M. R. Gatehouse who is my PhD main advisor. My PhD is focused on using RNAi technique targeted to sodium ion channels and calcium ion channels as a proof of concept towards the development of a safe and sustainable strategy for control of insect pests.

Teaching Assistant/ Assistant lecturer: 2010- 2016

Entomology Department, Faculty of Science, Benha University, Egypt

Teaching different courses to undergraduate students in Entomology and Zoology departments and doing research in the field of insect growth regulators (IGRs) and some molecular techniques towards MSc degree. During this period, I did a project that provided baseline data on molecular effects of some selected IGRs on one of chitinases genes. The work resulted in publishing papers in both local journals and international proceedings.

Techniques Known

Well versed with various areas of bioinformatics. Apart from that basic biotechnological techniques, have been learned in RNAi, genetic engineering, molecular biology, biochemistry.

Abstract of PhD thesis

The voltage-gated sodium ion channel (VGSC) belongs to the largest superfamily of ion channels. Since VGSCs play key roles in physiological processes they are major targets for effective insecticides. RNA interference (RNAi) is widely used to analyse gene function, but recently, it has shown potential to contribute to novel strategies for selectively controlling agricultural insect pests. The current study evaluates the delivery of dsRNA targeted to the sodium ion channel paralytic A (TcNav) gene in *Tribolium castaneum* as a viable means of controlling this insect pest. Delivery of TcNav dsRNA caused severe developmental arrest with larval mortalities up to 73% post injection of dsRNA. Injected larvae showed significant ($p < 0.05$) knockdown in gene expression between 30–60%. Expression was also significantly ($p < 0.05$) reduced in pupae following injection causing 30% and 42% knockdown for early and late pupal stages, respectively. Oral delivery of dsRNA caused dose-dependant mortalities of between 19 and 51.34%; this was accompanied by significant ($p < 0.05$) knockdown in gene expression following 3 days of continuous feeding. The majority of larvae injected with, or fed, dsRNA died during the final larval stage prior to pupation. This work provides evidence of a viable RNAi-based strategy for insect control.

Experties

1. PCR optimization
2. Primer designing
3. NCBI BLAST and clustalW homology tree analysis
4. PCR troubleshooting
5. DNA isolation and quantification.
7. Agarose gel running and interpretation.
8. Restriction of DNA and its interpretation.
9. Bacterial growth and their biochemical and molecular characterization.
10. Transformation of bacteria.
11. Cloning and expression of genes in *E. coli*.
12. Media and reagents preparation.
13. Rearing insects in lab.
14. Done bioassays with Armyworms, Housefly, Mosquito and different bollworms of cotton.

Scientific Conferences /Workshops attended

1. The first international Conference of Biological Sciences 27-29-Sep. 2010 Cairo – Egypt.
2. The postgraduate poster conference 2013, school of biology , Newcastle University.
3. The postgraduate poster conference 2014 , school of biology , Newcastle University.
4. The postgraduate poster conference 2015 , school of biology , Newcastle University.
5. The postgraduate poster conference 2015 , Centre for Synthetic Biology, Newcastle University .

Professional Societies

Member of the Egyptian Society of Entomology.

Egyptian Academic Journal of Biological Sciences.

Papers Published and Presented

- Alshukri, B. , Astarita, F. , Al-Esawy, M. , **Abd El Halim, H. M.**, Pennacchio, F. , Gatehouse, A. and Edwards, M. (2019), *Targeting the Potassium Ion Channel Genes SK and SH, as a Novel Approach for Control of Insect pests: Efficacy and Biosafety*. *Pest. Manag. Sci.*. Accepted Author Manuscript. doi:10.1002/ps.5516
- Laudani, F., Strano, C. P., Edwards, M. G., Malacrinò, A., Campolo, O., **El Halim, H. M. A.**, ... & Palmeri, V. (2017). *RNAi-mediated gene silencing in Rhynchophorus ferrugineus (Oliver)(Coleoptera: Curculionidae)*. *Open Life Sciences*, 12(1), 214-222.
- Hesham M. Abd El Halim**, Baida M. H. Alshukri, Munawar S. Ahmad, Erich Y. T. Nakasu, Mohammed H. Awwad, Elham M. Salama, Angharad M. R. Gatehouse, Martin G. Edwards: *RNAi-mediated knockdown of the voltage gated sodium ion channel TcNav causes mortality in Tribolium castaneum*. Scientific Reports 07/2016; 6. DOI:10.1038/srep29301
- Erich Yt Nakasu, Filitsa Karamaouna, Georgios K Partsinevelos, **Hesham M Abd El Halim**, Elaine C Fitches, Prashant Pyati, John A Gatehouse, Angharad Mr Gatehouse, Martin G Edwards: *Sublethal effects of the insecticidal fusion protein ω -ACTX-Hv1a/GNA on the parasitoid Eulophus pennicornis via its host Lacanobia oleracea*. *Pest Management Science* 04/2015; 72(3). DOI:10.1002/ps.4030
- Reda F A Bakr, Mona F Abd Elaziz, Nehad, Mohamed H Awad, **Hesham M Abd El Halim**: *Molecular cloning and sequence analysis of vira-like chitinase gene from the cotton leaf worm, Spodoptera littoralis Bosid (Lepidoptera: Noctuidae), treated with two insect growth regulators*. *International Journal of Pharmacy and Biological Sciences* 07/2015; 10(4). DOI:10.9790/3008-10413845
- Bakr, Reda FA, M. F. Abd Elaziz, N. M. El-barky, M. H. Awad, and **Hesham M Abd El Halim**. " *Biological and molecular aspects of the insect growth regulator lufenuron on Spodoptera littoralis (Bosid) (Lepidoptera:Noctuidae)*." *Egypt. Acad. J. Biolog. Sci* 6, no. 2 (2014): 1-16.
- Bakr, Reda FA, M. F. Abd Elaziz, N. M. El-barky, M. H. Awad, and **Hesham M Abd El Halim**. "The Activity of Some Detoxification Enzymes in Spodoptera Littoralis (Boisd.) Larvae (Lepidoptera–Noctuidae) Treated With Two Different Insect Growth Regulators." *Egypt. Acad. J. Biolog. Sci* 5, no. 2 (2013): 19-27.
- Bakr, Reda FA, N. M. El-Barky, M. F. Abd Elaziz, M. H. Awad, and **Hesham M Abd El Halim**. "Effect of Chitin synthesis inhibitors (flufenoxuron) on some biological and biochemical aspects of the cotton leaf worm Spodoptera littoralis Bosid.(Lepidoptera: Noctuidae)." *Egypt. Acad. J. Biolog. Sci* 2, no. 2 (2010): 43-56.

Researchgate ID:

https://www.researchgate.net/profile/Hesham_Abd_El_Halim2/contributions

Google scholar ID:

<https://scholar.google.com.eg/citations?user=N5wfrf8AAAAJ&hl=en>

