

Curriculum Vitae

Name: Dr Nermin Adel El Semary

Nationality: Egyptian

Work address: Department of Botany and Microbiology, Faculty of Science, Helwan University, Ain Helwan, Cairo, Egypt. Post Code (11795).

Current appointment: Associate professor at the Botany and Microbiology Department, Faculty of Science, Helwan University (2011-present).

Previous appointments: Lecturer at the Botany and Microbiology Department, Faculty of Science, Helwan University (2005-present).

- Assistant Lecturer at the Botany Department, Faculty of Science, Helwan University (1999-present). Demonstrator at the Botany Department, Faculty of Science, Helwan University (1994-1999).

Academic qualifications

2000-2005, PhD from the School of Biological Sciences, Faculty of Science, University of Bristol for a thesis entitled "**Anabaena and associated bacteria: molecular approaches to studying microbial community structure and taxonomy**"

1996-1999, Master of Science from the Botany department, Faculty of Science, Helwan University for a Thesis entitled

(Physiological studies on *Zea mays* plants under water stress conditions).

1995-1996, PreMaster in Algae and Plant physiology, Botany Department, Faculty of Science, Helwan University, Cairo, Egypt (passed successfully).

1994-1995, PreMaster in Plant Ecology and Physiology, Department of Botany, Faculty of Science, Cairo University (passed successfully).

1990-1994, Bachelor of Science in Botany, Department of Botany, Faculty of Science, Cairo University, Egypt. The final-year Grade was Excellent (the second top student). The grades for four years of study were: Very Good, Very good, Excellent, Excellent. The Cumulative Grade (average) for four years of study was Very Good with Honour.

Honours and Prizes

- Awarded Medal of Honour and Certificate of Appreciation for graduation with distinction (1994).
- Awarded the University of Helwan's Encouragement Award in the field of Basic Sciences (2011).
- Awarded the African Union Kwame Nkrumah Scientific award-Regional Women award for North Africa (2011).
- Awarded the State Incentive (encouragement) Award for Biological Science (2012).

Grants and fellowships awarded

- 1) Awarded the president's travel grant, Society for general Microbiology, UK, 2005 to attend the sixth European workshop on molecular biology of cyanobacteria in Gdansk, Poland.
- 2) Awarded the student travel grant, Society for general Microbiology, UK, 2005 to attend the society meeting at Keele University, September, 2005.
- 3) Awarded the field work grant by the Genetics Society, UK, **2006**.
- 4) Awarded **the IUMS-SGM-UNESCO fellowship** for Scientists from developing countries, UK, **2006**, through competition, to perform postdoctoral research at Bristol University, UK.
- 5) Awarded the **Wantanabe Book fund** for the purchase of books for the library of the Faculty of Science, Helwan University, 2006.
- 6) Awarded the Junior Scientist travel grant, the Genetics Society, UK in 2007 for attending the 58th meeting of the Ecological Genetics Group (ECG), The British Ecological Society, Leicester, United Kingdom.
- 7) Awarded the International Comestech-Isesco research grant for young scientists, through international competition to perform molecular research.

- 8) Awarded the UNESCO-Priority Programme II- water and ecosystem fellowship, by competition representing Egypt, to do short term research fellowship in the School of Biological Sciences, University of Bristol, UK in 2008.
- 9) Nominated for the TWAS-UNESCO fellowship 2013.

Research and teaching experiences

- Plant tissue culture (three-months training course at the National Research Centre in Cairo, Egypt, 1993).
- Practicals for undergraduates which span a wide range of biological aspects (from the period of 1994-2000).
- Participation in the establishment of Plant Physiology and Algae laboratory, Faculty of Science, Helwan University, Egypt (1994-2000). Currently, establishing the algae unit within the lab (2005-present).
- Master degree, through research for, dissertation entitled “**Physiological studies on *Zea mays* under water stress conditions**”. The research practice included agronomical, biochemical, anatomical and statistical analyses on maize plants under drought conditions in the absence and presence of growth regulators (1997-1999).
- PhD research was based on the study of *Anabaena* spp. community composition in some of The UK lakes. The thesis was awarded in August 2005 with few minor corrections. The thesis is entitled "***Anabaena* and associated bacteria: molecular approaches to studying community structure and taxonomy**".

Academic and scientific past and current responsibilities

1-Lecturing different courses mainly: Molecular Genetics (Third-year MicroBiology and Microbiology/Biochemistry students), Advanced algal Physiology and taxonomy, (Third-year Botany/Chemistry students), Algae (Second-year Biology/Geology-Geology/Biology, Faculty of Education), Algae and Archaeogoniates (first year Geology students) and Archaeogoniates (third year Botany/Chemistry students) and other courses

- 1- Performing research and starting the molecular and biotechnological studies on algae in Helwan University.
- 2- Member of the **Education Quality Assurance** Unit responsible for the reform of Education within the Faculty of Science, Helwan University.
- 3- Member of the Machines and tools committee within the Department of Botany and Microbiology, Faculty of Science, Helwan University.
- 4- Training the academic staff within the Department of Botany and Microbiology on course and programme specification writing and its documentation, self-evaluation studies and SWAT analysis.
- 5- Supervising undergraduate students in their graduation project (research essay)
- 6- Establishing the first algal collection of the Department of Botany and Microbiology and its database.
- 7- Supervising three Master students pursuing their Master through research.
- 8- Participating in the modification of the Higher studies into credit hours system within the Department.
- 9- Participating in the modification of the undergraduate studies into credit hours system within the Department and the preposee of establishment of new programme Plant biotechnology
- 10- Supervising practicals and designing experiments for the practical class.
- 11- Honourary member of the University of Bristol between 2006-2008.
- 12- Working as a member of exam liasion and results committee.
- 13- Representative of the Egyptian Natural Toxins society at Helwan University.

International research projects:

- 1) An algal consultant and a group leader in the **International project of Biodiversity monitoring and assessment project (BioMAP) of Egypt**, being responsible for documenting the algal taxa identified in Egypt. The project was co-funded by the United Nations and the Italian Government (2007).

2) Member of the american-Egyptian STDF project team on generating biodiesel from Algae and plants led by Professor Guzine El Diwani from National Research Centre and : Professor Ihab Farag from the United states of America (2009-2010)

USDA/OICD/RSED Government No:- 58 – 3148 – 045

UNH Account No : 110155-UDKEIF

:Project Type

U.S. - Egypt Science and Technology Program

:Project Title

Development in Biodiesel Production and Sources.

National Projects

The Project of Development of Algae and Physiology Lab. recently won the fund of the University of Helwan in 2014.

There are already two projects under review: one submitted to Misr El Kheir organization and the other to The Academy of Scientific Research under the call of National Challenges Programme.

Publications

1)Books

I- International Book contribution: Co-authoring among other authors from USA, UK, the Netherlands, etc... in a book entitled. “**Unravelling the Algae: The Past, Present, and Future of Algae Systematics**”. Published by Taylor & Francis Group LLC.6000 Broken Sound Pkwy, NW.Boca Raton, FL 33487, **USA**. 2007. Pp: 93-101. <http://www.routledge.com/books/details/9780849379895/>

II- International Book contribution: Co-authoring among other authors from across the globe in a book entitled “**Bioactive Compounds: Types, Biological Activities and Health Effects**“ Published by Nova Publishers, **USA**, 2011, ISBN 978-1-61324-865-2. Pp:319-331 Editor: A. Bitterlich and S. Fischl https://www.novapublishers.com/catalog/product_info.php?cPath=185_188_209_190&products_id=26009&osCsid=

III- International book : Solely authoring the book”

Microorganisms in soil: interesting examples and amazing ecological relationships and impacts”. Published by Lambert Academic publisher. Germany , 2012.

IV-International book chapter:

Authoring a book chapter entitled

“Fatty acids from some microalgae: Ecological importance and biotechnological potentials” Published in the book entitled **Advances in**

Biotechnology and Ecological Sciences, published by Env Books, India. Pp:190-197

V- Biofuel chapter (Under preparation).

2) Peer-reviewed Scientific Papers

1) Zeid, I. M. and El-Semary, N. A. (2001). Response of two differentially drought tolerant varieties of maize to drought stress. Pakistan Journal of Biological Sciences. 4(7), 779-784. <http://www.ansijournals.com/abstract.php?doi=pjbs.2001.779.784>.

2) Fadiel A., Eichenbaum, K. D., El Semary, N. and Epperson, B. (2007). *Mycoplasma* genomics: Tailoring the genome for minimal life requirements through reductive evolution. Frontiers in Bioscience, 12, 2020-2028, **USA**. Available from: <http://www.bioscience.org/current/special/trushin1.htm>

3) El Semary, N. A. (2008). Detecting the expression of a microcystin biosynthetic gene (*mcyB*) from *Microcystis* strains and the effect of temperature on the expression using real-time PCR. Egyptian Journal of Biotechnology. 29: 190-201.

4) El Semary, N., Ghazy, S., Badawy, A., El Fouly, M. and Hassoub, M. (2009). Investigating the effect of mineral nutrition and light quality on some growth-related metabolites and pigments of two filamentous cyanobacteria (cyanoprokaryot). Egyptian Journal of Phycology. 10: 57-67.

5) El Semary, N. A. (2009). Investigating the potential for biodiesel and bioactive compounds production from some cyanobacteria. Egyptian Journal of Phycology. 10: 85-97.

6) El Semary, N. A., Ghazy, S. M. and Abd El Naby, M. (2009). Investigating the taxonomy and bioactivity of an Egyptian *Chlorococcum* isolate. Australian Journal of Basic and Applied Sciences, 3(3): 1540-1551.

<http://www.insipub.com/ajbas/2009/1540-1551.pdf>

7) Magda A. M. Soroor, Hoda H. El Hendawy, Abd-ElHady M. Ghazy, Nermin El Semary, Kamal M.A. Khalil, Ahmed M. Abd El Aziz (2009). Characterization of an alkine metalloprotease secreted by the Entomopathogenic bacterium *Photorhabdus* sp. strain EK1". Research journal of Agriculture and Biological Sciences. 5(4): 349-360.

<http://www.insipub.com/rjabs/2009/349-360.pdf>

8) El Semary, N. (2010). Optimised electroporation-induced transformation in *Microcystis aeruginosa* PCC7806. Biotechnology, Agronomy, Society and Environment (BASE).14(1), 149-152. **Belgium**. Available from:

<http://popups.ulg.ac.be/Base/document.php?id=5185>

- 9) El Semary, N. (2010). Investigating the factors affecting growth and cellular *mcyB* transcripts of *Microcystis aeruginosa* PCC7806 using Real-Time PCR. Annals of Microbiology (Springer-University of Milan, **Italy**). DOI: 10.1007/s13213-010-0024-5. 60(2):181-188. <http://www.springerlink.com/content/b501065611uq7280/>
- 10) El Semary, N. and Abd El Naby, M. (2010). Characterization of a *Synechocystis* sp. from Egypt with the potential of bioactive compounds production. World Journal of Microbiology and Biotechnology. **The Netherlands**. DOI 10.1007/s11274-009-0280-3. 26 (6): 1125-1133. <http://www.springerlink.com/content/2620w7h267341h56/>
- 10) The polyphasic description of a *Phormidium*-like cyanobacterium from Egypt with antimicrobial activity of its methanolic extract (2011). *Nova Hedwigia*, Germany, Vol. 92 issue 3–4, 377–390.
- 11) El Semary, N. A. (2010). Modern methods of detection and elimination of microcystins toxins produced by cyanobacteria: A minireview. Journal of Applied Sciences. <http://scialert.net/qredirect.php?doi=jas.0000.20279.20279&linkid=pdf>
- 12) El Semary, N. A. (2011). The polyphasic description of a *Desmodesmus* spp. isolate with the potential of bioactive compounds production. Biotechnology, Agronomy, Society and Environment (BASE). Belgium, 15(2), 231-238.
- 13) El Semary, N. A. (2012). The characterisation of bioactive compounds from an Egyptian *Leptolyngbya* sp. strain. Annals of Microbiology. 62:55- 59. DOI 10.1007/s13213-011-0226-5.

- 14) El Sema'y, N. A. (2012). The antimicrobial profile of extracts of a *Phormidium*-like cyanobacterium changes with phosphate levels. *World Journal for Microbiology and Biotechnology*. 28:585–593. DOI 10.1007/s11274-011-0851-y
- 15) El-Arady O., Abo El-Enin S. A., El Sema'y N.A., El Diwani G. (2012). Microalgal culture in photo-bioreactor for biodiesel production: case studies from Egypt. *Afinidad*. 558: 137- 143. (Spain)
- 16) El Sema'y, N. A. (2013) Microscopic, molecular and biochemical investigations to characterise a benthic cyanoprokaryote *Leptolyngbya* strain from Egypt. *Microscopy Research and Technique*. 76:249–257. (USA)
- 17) El Sema'y, N. and Mabrouk, M. (2013). Molecular characterisation of two microalgal strains from Egypt with antimicrobial activity of their extracts. *Biotechnology Agronomy Society Environment*. 17(2): 312-320. (Belgium)
- 18) El Sema'y, N. (2014). Gene mining: A case study on putative iron-responsive cyanobacterial genetic locus using *in silico* bioinformatics, ecophysiology and expression-combined approach. *Bangladesh Journal of Botany*. June issue 43(1): 79-86.
- 19) El Sema'y, N. (2013). Siderophores from cyanobacteria: an interesting role in the ambiguous iron uptake machinery (Mini-review). *Egyptian Journal of Botany*. 257-264.

- 20) El Semary, N.A.; Osman, M.E.; Ahmed, A.S.; Botros, H.W. ; Farag, A. T. (2014). Investigating the antimicrobial bioactivity of cyanobacterial extracts on some plant and human pathogens. Isotope and radiation research (Bulletin of MRRCAC). (In Press)
- 21) Ibrahim Mohamed Zeid, Safia Mohamed Ghazi, Nermin Adel El Semary and Amira Mohamed Abd El-Sattar (2015). Counteracting inhibitory effect of salinity stress on cowpea germination using cyanobacterial extracts.(Accepted and In press). Egyptian Journal of Phycology.
- 23) Ibrahim Mohamed Zeid, Safia Mohamed Ghazi, Nermin Adel El Semary and Amira Mohamed Abd El-Sattar (2015). Ameliorative effect of biofertilisers on the oxidative stress and ionic composition of cowpea under salinity stress. Egyptian Journal of biotechnology. (In press)
- 24) El Semary, N. A., Fouda, M. (2015). Extracts of *Cyanothece* sp. strain (cyanobacteria) from Egypt has anticancer activity: first record .Asian Pacific Journal of tropical biomedicine .5(12): 992-995.
- 25) El Semary, N.A. Diatoms as bioindicators of littoral zone: A Case Study on first records (under review).
- 26) El Semary, N. A. and Hoppenrath, M. Benthic dinoflagellates from Red Sea, Egypt: Early records.(Submitted to Microscopy Research and Technique).

27) El Semary, N.A.; Osman, M.E.; Ahmed, A.S.; Botros, H.W. and Farag, A. T. (2015). Antibiosis towards human and plant pathogens via radiation-induced *Synechococcus elongatus*. Egyptian Journal of Biological Pest Control. (accepted and In press).

Conference publication

28) Investigating the effect of mineral nutrition and light quality on growth and nutrient uptake of two filamentous cyanobacteria. Proceedings of the second international conference on Phycology, Limnology and Aquatic Sciences in 2010, 14-15 February. Organised by Suez Canal University, Pannonia University, Veszprém, Hungary (PU), Balaton Limnological Research Institute (BLRI), Egyptian Phycological Society (EPS) and Hungarian Phycological Society (HPS) Port Said, Egypt. The abstract was entitled "Investigating the effect of mineral nutrition and light quality on growth and nutrient uptake of two filamentous cyanobacteria" (February 14-15, 2010).

Societies membership

Local societies

- 1) Member of the Egyptian Botanical Society since 1999
- 2) Member of the Egyptian natural toxins Society, since 2006.
- 3) Member of the Egyptian Phycological society, 2010.

International societies

Membership was obtained from several societies in the United Kingdom which include:

- 1) Genetics society, UK
- 2) British Ecological Society
- 3) British Phycological Society

Languages

1) English: Excellent

2) German: Fair, second foreign language and was studied for seven years. Obtained full mark in both final exam of high school certificate (1990) and Premaster exam (1995).

Dissertations supervision

Co-supervision of nine postgraduate students: one enrolled for PhD and eight enrolled for Masters Degree: Five of the Master students were successfully awarded M.Sc. as follows:

-The first is entitled “Characterisation of bioactive compounds from some microalgae”

Student name: Mai Abd El Naby (2006-2009).

-The second is entitled “Effect of mineral nutrition on pigmentation of cyanobacteria.

Student name: Mohamed Hassoub (2006-2009).

-The third is entitled” Isolation and characterisation of protease enzyme from *Photorhabdus* bacteria”. Student name: Ahmed Meselhy (2006-2009).

-The fourth is entitled “The use of *Chlorella* strains (Chlorophyte) for waste water treatment”. Student name: Fatma Nagm Eldin (2010-2013).

-The fifth is entitled “The effect of UV irradiation on antimicrobial profile of cyanobacteria”. Student name: Aya Tareef (2010-٢٠١٥).

-The PhD thesis is on the use of biofertilisers on cow pea plants under salinity stress. Student name: Amira Mohamed (2012-2015).

The three ongoing masters are

-The first is entitled “Sustainable Aquaculture for growing algae, fish and plants”. Student name Radwa yaseen (2013- present).

-The second is entitled ”Molecular studies on cyanobacteria with a special reference to restriction enzymes”. Student name Heba El Sayed (2013-present).

-The third is entitled “Investigating the effect of fungal and cyanobacterial extracts on MERSA. Student name: Shaymaa Aly Omran (2013-present).

Participation in Scientific meetings abroad

1) Participation in the summer school graduate course on: “Functional genomics: theory and hands-on data analysis”, run by Utrecht University, the Netherlands, August 2003.

The course covered: genome analysis, transcriptomics, proteomics and functional genomics (microarray technique).

2) The Society of General Microbiology meeting at Keele University, 12-14 September, 2005. The abstract was entitled "*Anabaena* community structure (partially) unveiled".

3) The 6th European Workshop on the Molecular Biology of Cyanobacteria in September, 2005 in Gdansk, Poland. The talk was entitled “Species concept: A case study on some freshwater *Anabaena* spp”.
<http://www.cyanobacteria.biotech.univ.gda.pl/mcb.php?id=10>

4) The 51st meeting of the Ecological Genetics Group (ECG), The British Ecological Society, April 2007, Leicester, United Kingdom. The talk was entitled "Effect of light on microcystins biosynthesis".

5) The 56th meeting of the British Phycological Society, 3-5 January, 2008 held at the school of Biological Sciences, University of Bristol, United Kingdom. The abstract was entitled “Bioactive compounds from novel Egyptian cyanobacterium”.

6) The 25th meeting of the Saudi Biological Society, in King Faisal University, Alhsaa, Kingdom of Saudi Arabia. 11-13 May, 2010. The abstract was entitled “Microcystins and microcystins-producing cyanobacteria: detection and elimination using chemical, molecular and nanotechnological methods”.

Local scientific meetings

1) The second international natural toxin conference, Egyptian Society of Natural toxins, Egypt. 18-22 December, 2006.

2) The third international natural toxin conference, Egyptian Society of Natural toxins, Egypt. 18-22 December, 2008. The abstract entitled “Factors affecting cellular microcystin content”.

3) Participation in one-day workshop on Renewable energy organised by Japanese Embassy and held at the Samiramis-Intercontinental Hotel, 7/7/2008.

4) Workshop held at the MTI university under the title “Promotion and role of basic

science in Egypt and Germany” on 4-5/1/2009 as an invited academic guest.

<http://www.mti.edu.eg/app/page.aspx?pageID=169>

5) Participation in the second international conference on Phycology, Limnology and Aquatic Sciences in 2010, 14-15 February. Organised by Suez Canal University, Pannonia University, Veszprém, Hungary (PU), Balaton Limnological Research Institute (BLRI), Egyptian Phycological Society (EPS) and Hungarian Phycological Society (HPS) Port Said, Egypt. The abstract was entitled” Investigating the effect of mineral nutrition and light quality on growth and nutrient uptake of two filamentous cyanobacteria” (February 14-15, 2010).

6) 4th International conference on Natural Toxins held on 20-22 December 2010. The abstract was entitled “Optimized electroporation-induced transformation in *Microcystis aeruginosa* PCC7806”.

7) The international conference on wastewater treatment co-organised by Egypt (National research centre and Cairo University) and Germany (DAAD). February 2012.

8) The third conference for biotechnology and applications organised by the Department of Botany & Microbiology, Faculty of Science, Helwan University and the Botanical Society, April 2013.

9) The International conference on agriculture and Environment for sustainable development. (25-27 May, 2015), National Research Centre, Cairo, Egypt. The Abstract was entitled ”Saline water for growing of fish, algae & plants: Early results of sustainable chain aquaculture”.

Conference organisation

Participated in the organisation of the 6th international workshop on African

Archaeobotany by Department of Botany and Microbiology, Helwan University, 2009.

Academic courses during PhD study in Bristol, UK

- 1 - Molecular genetics course with Level 2 Biology students (School of Biological Sciences, University of Bristol, 2000).
- 2 - Cyanobacteria and plastids with Level 3 Biology students (School of Biological Sciences, University of Bristol, 2000).
- 3 - Use of molecular techniques in the study of microbiological populations with Level 2 Biology students (School of Biological Sciences, University of Bristol, 2001).
- 4 - Basic Radiation Protection course run by Safety Office (University of Bristol, 2000).
- 5 - Starting your PhD run by Staff development (University of Bristol, one-day course, 2001).
- 6 - Presentation skills run by the Graduate School of Education (University of Bristol, one-day course, 2002).
- 7 - Introduction to microarrays run by the School of Biological Sciences (University of Bristol, one-day course, 2003).
- 8 - Population genetics with Level 1 Biology students (School of Biological Sciences, University of Bristol, 2003).
- 9 – Post-graduate statistics lectures (School of Biological Sciences, University of Bristol, Three-day course, 2004).
- 10 - Systematic methods course which tackled phylogenetic analysis and tree construction methods run by the Department of Earth Sciences (University of Bristol, several weeks course, 2004).
- 11- Teaching and learning for postgraduates who teach run by the Graduate School of Education (University of Bristol, two-day course, 2004).
- 12- Academic writing for international students (University of Bristol, Student development unit, one-day course, 2004).
- 13- Essay writing (University of Bristol, student development unit, One-day course, 2004).

Courses in Egypt after obtaining my Ph.D.

a) Courses for academic staff development

- 1- Skills of communication (4-day course, University of Helwan, 2005).
- 2- Design of a university curriculum (3-day course, University of Helwan, 2005)
- 3- Credit hours (two-day course, University of Helwan, 2006).
- 4- Running meetings (two-day course, University of Helwan, 2006).
- 5- Teaching small and large groups (Three-day course, University of Helwan, 2006).
- 6- Programme and course specification(one-day course, Ain Shams University,2006)
- 7- The orientation course for University teacher (Helwan University , 1-11/7/2007)
- 8- Conference organisation (Helwan University, 21-23/6/2009).
- 9- The use of technology in teaching (Helwan University, 28-30/5/2009).
- 10- Scientific publication (Helwan University, 25-28/5/2009).
- 11- Research proposal writing (Helwan University, 2-day course 2014).
- 12- The financial & legal aspects of universities (Helwan University, 2-day course, December 2013).
- 13- The scientific research (Helwan University, 2-day course January 2014).
- 14- The management of research team (Helwan University,2-day course, April 2014).
- 15- The Ethics of profession (Helwan University, 2-day, November 2013).
- 16- Strategic Planning (Helwan University, 2-day course, May 2015).
- 17- Safety procedures during emergency (May, 1 -day course, 2014).
- 18- Quality files (1-day course,2014).

b) Other academic courses

- Summer school on Protein crystallography and drug design, Faculty of Science, Cairo University, May –July, 2006.
- Three day practical course on waste water analysis (June 2011) organised by the Syndicate of Scientists and the Central lab of the Science Faculty, Ain Shams University, Egypt.

c) Computer courses

International Computer Driving License (ICDL) courses (summer 2007), University of Helwan, finished the courses and successfully passed the seven modules exams and was awarded the international license endorsed by UNSCO in 2007.