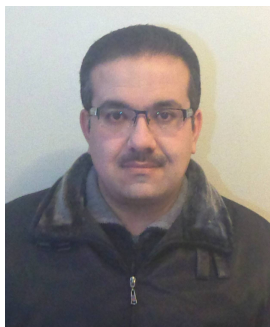


Hasan Y. Alniss

Current address:

University of Toronto
Leslie Dan Faculty of Pharmacy
144 College Street, room 1170
Toronto, Ontario, M5S 3M2, Canada
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Home Address:

An-Najah National University
Faculty of Medicine and Health Sciences
Department of Pharmacy
Nablus, Palestine
hasan.alniss@najah.edu

PERSONAL INFORMATION

Born: 3 June 1978, Toulkarm, Palestine

Nationality: Palestinian & Jordanian

Marital status: Married

EDUCATION

7/2013-6/2014 *University of Toronto/Leslie Dan Faculty of Pharmacy Toronto-Canada*

Postdoctoral Fellowship

Project : “Characterization of the factors that stabilize DNA Quadruplexes “

Supervisor: Prof. Robert Macgregor

11/2007-12/2010 *Strathclyde Institute of Pharmacy and Biomedical Sciences Glasgow-UK*

PhD in Pharmacy and Biomedical Sciences (Medicinal Chemistry)

Thesis title: “Biophysical characterization of the processes that drive ligand associations with the minor groove of DNA” *¹

Supervisors: Prof Simon Mackay and Dr Nial Wheate.

09/2006-09/2007 *Strathclyde Institute of Pharmacy and Biomedical Sciences Glasgow-UK*

MSc. in Pharmaceutical Analysis with Distinction

Research project: “MALDI imaging and analysis of minor groove binders by ESI-MS”.

Supervisor: Dr David G. Watson .

09/1996-02/2001 *An-Najah National University Nablus-Palestine*

BSc. in Pharmacy

Main coursework included clinical pharmacology, pharmacokinetics, industrial pharmacy, pharmaceutical technology, pharmaceuticals, organic chemistry, pharmaceutical analysis, phytochemistry, and medicinal chemistry.

EMPLOYMENT HISTORY

08/2013-07/2014 *Leslie Dan Faculty of Pharmacy-University of Toronto Toronto-Canada*

Visiting Assistant Professor

Taught topics (pharmacy undergraduate students/ students number: 250):

Drugs that target nucleic acids, physical incompatibility of drugs & the pharmaceuticals injectable formulations.

*¹ A description of the project is attached in the last page.

02/2011– present *An-Najah National University-Department of pharmacy Nablus-Palestine.*

Assistant Professor

Taught courses: Medicinal Chemistry (I, II and III), Organic Chemistry (I & II), Organic Chemistry Lab (I) and Quality Control of drugs. (average class size: 50 student)

11/2007 – 01/2011 *University of Strathclyde Glasgow-UK.*

Teaching Assistant

Whilst undertaking my PhD, I have constantly been involved with the supervision of undergraduates in their practical and theoretical classes.

Supervised classes includes : Biopharmacy, Fundamental of Pharmacology and Physiology.

01/2004 -09/2006 *Palestinian Ministry of Health Qalqilia-Palestine*

Pharmaceutical Inspector

My work aimed to ensure that pharmacists in private and public sector comply with the laws and regulations of good pharmacy practice.

02/2001 - 12/2003 *Palestinian Ministry of Health Qalqilia-Palestine*

Community Pharmacist

Duties: Drug dispensing and patient counseling.

RESEARCH EXPERIENCE

Technical skills & competences

During my postgraduate & postdoctoral studies, I have developed my knowledge of several biophysical techniques through the extensive range of equipment available at the university, such as :

- NMR Spectroscopy (small and macromolecules)
- Isothermal titration calorimetry (ITC)
- Mass spectrometry (MS)
- Chromatography instrumentation techniques (GC/MS, LC-ESI/High- resolution MS).
- Chromatography separation (TLC, HPLC and GC).
- Capillary electrophoresis, gel electrophoresis & MALDI imaging
- Circular dichroism (CD) & fluorescence spectroscopy
- UV-Visible and IR spectroscopy

I also have practical experience in:

- Design and synthesis of small organic molecules to regulate bioprocesses
- Chemical conjugation methodologies
- Purification and characterization of small organic molecules and biological macromolecules
- Spectroscopic characterization of new organic compounds
- Computer-aided drug design and computational simulations of biological systems
- Biophysical characterization of ligand-macromolecule interactions

Research interests

- Cancer drug discovery
- Synthesis of small molecules to regulate bioprocesses
- Biophysical Characterization of the Nucleic acids structures and the complexes they form with drugs
- Molecular modeling of biological systems
- Development of non-viral gene delivery vehicles

Supervised M.Sc. projects

- “Synthesis of amide-linked minor groove binders (MGBs) to target the Androgen Response Element Sequence”. Saber Abu Jabal. 2013. An-Najah National University, Nablus, Palestine.
- “Synthesis and biological activity of Distamycin analogues”. Sumood Yassin. 2013. An-Najah National University, Nablus, Palestine.

Research Funding History

Distinguished Scholar Award 2013/7 - 2014/6 *University of Toronto- Canada*

- Funding source: Arab Fund for Economic & Social Development- Fellowships Program Safat 13080 Kuwait, State of Kuwait
- Total funding: \$65000 (United States dollar)
- Funding competitive?: Yes, this fund is open to all academics working in Arabic Universities

University of Strathclyde Research Scholarship 2007/09-2010/09 *University of Strathclyde-UK*

- Funding source: University of Strathclyde, SIPBS, 27 Taylor Street, Glasgow G4 0NR, UK
- Total funding: \$120000 (United States dollar)
- Funding competitive?: Yes, this fund is open to all local and international students

Said Foundation Scholarship 2006/9 - 2007/8 *University of Strathclyde-UK*

- Funding source: Said Foundation, 24 Queen Anne's Gate, London, SW1H 9AA, United Kingdom
- Total funding: \$30000 (United States dollar)
- Funding competitive?: Yes, this fund is open to all applicants from Syria, Lebanon, Jordan, Iraq, and Palestine

PROFESSIONAL MEMBERSHIPS

Professional Affiliations

- Pharmacy Practicing License (Ministry of Health -Palestine- Reg. #: 13/46)
- Pharmacy Practicing License (Pharmaceutical Association - Jerusalem Centre - Reg. #: 1333)
- American Chemical Society

SKILLS

Languages

Fluent English and Arabic.

Computer skills (software)

GCQ (Thermo), LCQ-classic (Thermo), LCQ-Deca (Thermo), Xcalibur, Origin 7, Origin pro, Sigma plot, Minitab, SIMCA, Microsoft office , ChemDraw, Molecular Modeling packages (Amber, Sybyl 6.3, Mardigras, Discovery Studio, PyMOL), Sparky , Topspin and various NMR packages. Familiarity with online database searching (e.g. Web of Science, Crossfire, SciFinder, PubMed) and Chemical Abstracts. I have a license to use the UK National Grid Service (NGS).

AWARDS RECEIVED

- Distinguished Scholar Award-Arab Fund for Social and Academic Development (2013-2014) Visiting Professor, Leslie Dan Faculty of Pharmacy-University of Toronto. Canada.
 - University of Strathclyde Research Scholarship (2007-2010)-PhD. in Pharmacy and Biomedical Sciences, University of Strathclyde. UK.
 - Said Foundation Scholarship (2006-2007) - MSc. in Pharmaceutical Analysis, University of Strathclyde.
 - UNRWA University Scholarship (1996-2001) - BSc. in Pharmacy, An-Najah National University.
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PUBLICATIONS

Articles published in refereed international journals:

The Study of the Interaction of TMPyP4 with Guanine- and Cytosine- Rich DNA and RNA repeats of C9orf72.

Hasan Y. Alniss, Bitu Zamiri¹, Christopher E. Pearson, & Robert B. Macgregor Jr. (submitted to the Journal of Physical Chemistry, 2014)

Molecular recognition of DNA by thiazotropsin class analogues through the DNA minor groove.

Hasan Y. Alniss, Stephanie A. T. Dillon, Nahoum G. Anthony, Abedawn I. Khalaf, Simon P. MacKay, Colin J. Suckling and John A. Parkinson. (Accepted, European journal of chemical biology, DOI: 10.1002/cbic.201402202, 2014)

Thiazotropsin aggregation and its relationship to molecular recognition in the DNA minor groove.

Marie-Virginie Salvia, Fiona Addison, **Hasan Y Alniss**, Niklaas J Buurma, Abedawn I Khalaf, Simon P Mackay, Nahoum G Anthony, Colin J Suckling, Maxim P Evstigneev, Adrián Hernandez Santiago, Roger D Waigh, John A Parkinson. Biophysical Chemistry. 2013, 179, 1–11.

Rationalizing sequence selection by ligand assemblies in the DNA minor groove: the case for thiazotropsin A.

Hasan Y. Alniss, Nahoum G. Anthony, Abedawn I. Khalaf, Simon P. Mackay, Colin J. Suckling, Roger D. Waigh, Nial J. Wheate and John A. Parkinson. Chem. Sci., 2012, 3, 711-722

Ranking ligand affinity for the DNA minor groove by experiment and simulation.

Wittayanarakul K, Anthony NG, Treesuwan W, Hannongbua S, **Alniss H**, Khalaf AI, Suckling CJ, Parkinson JA and MacKay SP. Med. Chem. Lett. Med. Chem. Lett., 2010, 1 (8), 376–380.

A detailed binding free energy study of 2:1 ligand-DNA complex formation by experiment and simulation.

Treesuwan W, Wittayanarakul K, Anthony NG, Huchet G, **Alniss H**, Hannongbua S, Khalaf AI, Suckling CJ, Parkinson JA and Mackay SP. Physical Chemistry Chemical Physics, 2009, 11, 10682-10693.

Papers published in refereed international conference proceedings

A Sticky Problem: Harnessing self-assembly for DNA molecular recognition

Hasan Y. Alniss, Marie-Virginie Salvia & John A. Parkinson.. Physical Organic Chemistry Symposium. Glasgow, UK. April 7- April 9, 2009.

PDB structures:

Four NMR structures have been deposited in the Protein Data Bank (PDB) under accession codes 2mnb, 2nmd, 2mne and 2mnf. Chemical shift assignments have been deposited in the BioMagResBank (BMRB) under accession numbers 19886, 19888, 19889 and 19890.

Posters:

Hasan Y. Alniss, Nahoum G. Anthony, John A. Parkinson, Simon P. MacKay. **Thermodynamics of Lexitropsins-DNA interactions**. Biomedical Chemistry and Drug Discovery (BCDD) Research Day. SIPBS, Glasgow.UK. June 16, 2008.

Hasan Y. Alniss, Nahoum G. Anthony, John A. Parkinson, Simon P. MacKay. **Investigating the processes that drive lexitropsins-DNA associations**. Biomedical Chemistry and Drug Discovery (BCDD) Research Day. SIPBS, Glasgow.UK. June 15, 2009.

Presentations:

Thermodynamics of lexitropin-DNA interactions.

Faculty Research Seminar Series, Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK. March 19, 2008.

Molecular modelling of ligand-DNA complexes

Faculty Research Seminar Series, Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK. August 13, 2008.

Using NMR spectroscopy to obtain 3D structures of ligand-DNA complexes

Faculty Research Seminar Series, Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK. August 19, 2009.

Biophysical characterisation of the processes that drive ligand association with the minor groove of DNA

Faculty Research Seminar Series, Strathclyde Institute of Pharmacy and Biomedical Sciences, Glasgow, UK. June 16, 2010.

REFEREES

Prof Simon P. Mackay

University of Strathclyde, SIPBS, 27 Taylor Street, Glasgow G4 0NR, UK

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Email: simon.mackay@strath.ac.uk.

Dr John A. Parkinson

University of Strathclyde, 295 Cathedral Street, Glasgow G1 1XL, UK

Tel: +44 (0)141 548 2820

Email: john.parkinson@strath.ac.uk

Prof Rob Macgregor

University of Toronto, Leslie Dan Faculty of Pharmacy, 144 College Street, Toronto,
Ontario, M5S 3M2, Canada
Tel: 001 416-978-7332
Email: rob.macgregor@utoronto.ca

Dr Nial Wheate

Faculty of Pharmacy, University of Sydney, Pharmacy Building (A15)
Sydney NSW, Australia
Tel: +61 (0)2 9036 7647
Email: nial.wheate@sydney.edu.au

* **PHD Thesis title:** “Biophysical characterization of the processes that drive ligand associations with the minor groove of DNA”

Project description: The cationic lexitropsins, which bind non-covalently to the minor groove of DNA, have shown therapeutic potential in the treatment of cancer, viral and bacterial diseases. Understanding the factors that drive ligand-DNA associations, particularly the structural features, molecular forces and the energetics that dictate the overall binding process is of fundamental scientific interest as well as a prerequisite for the rational design and development of novel drugs. In this study, a holistic approach was followed to tackle this issue by combining thermodynamic and structural studies to gain insight into the factors that drive lexitropsin-DNA interactions by using different biophysical techniques.

In this project, DNA binding agents were synthesized and the complexes they form with DNA were characterized by using different biophysical techniques. Isothermal titration calorimetry (ITC) and circular dichroism (CD) were used to obtain a complete thermodynamic profile for lexitropsin interactions with different ODN sequences and that included the determination of the binding affinity (K), stoichiometry (n), enthalpy (ΔH), entropy (ΔS) and free energy of binding (ΔG). The thermodynamic studies aimed to reveal the molecular forces that drive the binding and to establish a link between the structure and the binding affinity by studying thermodynamic binding characteristics of closely related ligand structures to a specific binding site. NMR spectroscopy and restrained molecular dynamics simulations were used to obtain structural details for lexitropsin-DNA complexes. The NMR NOE derived inter-proton distances were used to generate three dimensional structures for these complexes via the restrained molecular dynamic simulations. The location of the binding site was determined by measuring the changes in chemical shifts of DNA protons upon ligand binding. The work also included synthesis of alkene-linked minor groove binders (MGBs) to investigate the role of the traditional amide links of these MGBs in the binding process.