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| <b>NAME</b><br>Ziad H. Al-Oanzi<br>Phone: 00966 536579190<br>Email: <a href="mailto:zhaoanzi@ju.edu.sa">zhaoanzi@ju.edu.sa</a> | <b>POSITION</b><br>Assistant Professor<br>Director of the central laboratory<br>Jouf University<br>College of Applied Medical Science<br>Department of clinical laboratory sciences<br>Sakaka, Saudi Arabia |  |
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### EDUCATION AND QUALIFICATIONS:

| INSTITUTION AND LOCATION   | DEGREE | YEAR(S) | FIELD OF STUDY                          |
|--|--------|---------|---|
| Department of Biochemistry, King Saud University (Riyadh - Saudi Arabia)                                 | B.Sc   | 1997    | Biochemistry                            |
| Clinical Biochemistry and Metabolic Medicine, The Medical School, University of Newcastle, Newcastle, UK | MPhil  | 2003    | Clinical Biochemistry                   |
| Institute of Cellular Medicine, The Medical Science University of Newcastle, Newcastle, UK               | PhD    | 2013    | Biochemistry of metabolism and diabetes |

**MPhil Thesis** : Vitamin D and vitamin D binding protein Gene Polymorphism in male Osteoporosis

**Ph.D Thesis** : The role of the hexosamine biosynthesis pathway in control of hepatic glucose metabolism

### A. Post-Doctoral Fellowships:

1. The British Council Post-doctoral Summer Research Programme to conduct a research on "**Role of methylglyoxal in the mechanism of action of sugars and metformin on gene expression**" at the Newcastle University, UK, 12<sup>th</sup> June 2014 until 30<sup>th</sup> August 2014.
2. The British Council Post-doctoral Summer Research Programme to conduct a research on "**Counter-regulatory effects of metformin on the effects of sugars on liver gene expression**" at the Newcastle University, UK, 8<sup>th</sup> June and 14<sup>th</sup> August 2015.
3. Visiting Fellow at the Institute of Cellular Medicine to work full time on two research projects at the Newcastle University, UK, from 26<sup>th</sup> June and 10<sup>th</sup> August 2018.

A) Frist project involved the phenotyping of a new mouse model for a common variant in the GCKR gene.

- B) Second project involved the study of new inhibitors of glycogen phosphorylase for their potency in cell based assay.

## **B. Research areas of interest**

Liver biochemistry, glucose and glycogen metabolism, regulation by insulin, metabolite control of gene expression, mechanisms of hepatic insulin resistance, Vitamin D metabolism and finally antioxidants and inflammations.

## **C. Training:**

- 1- **Clinical Analyzer**  
Training Course at "Konelab" Corporation in Finland.  
November 30 – December 3, 1998
- 2- **Immunoassay**  
Training Course under supervisor Dr. Andrew Skillen  
05th March 2001- 28th June 2001  
University of Newcastle, Newcastle, U.K.
- 3- **"Immunostaining, Confocal Laser Scanning Microscopy and Image Analysis"**  
For your participation as a trainer and Organizing the training.  
Central Laboratory of Jouf University (16-17 December 2020)

## **D. Work Experience:**

- 1) Taught the practical part of the following courses at King Saud University
  1. BCH 121 Biochemistry
  2. CLS 101 Clinical Biochemistry
  3. BCH 261 Dental Biochemistry
  4. BCH 499 Practical Biochemistry
- 2) Taught of the following courses at Jouf University
  1. CLS 232 Clinical Biochemistry 1
  2. CLS 331 Clinical Biochemistry 2
  3. CLS 333 Clinical Biochemistry 3
  4. CLS 431 Clinical Enzymology
  5. CLS 432 Practical Biochemistry
  6. CHS 262 Biochemical Nutrition
  7. CHS 226 Principles of Nutrition

## **E. Research Skills:**

### ***Molecular Biology:***

DNA and RNA extraction, PCR (cDNA and genomic DNA), Real time PCR and ChIP assay.

### ***Cell Biology:***

Primary rat hepatocytes isolated using a collagenase perfusion technique and culture of cell lines such as (HepG2, Hepatoma, Mine 6, INS 1, HeLa and C2C12)

### ***Immunology skills:***

Monoclonal antibody production, antibody purification, antibody isotyping, enzyme-antibody conjugation, sandwich ELISA development, radioimmunoassay, immunostaining and Immunoprecipitation.

### ***Protein skills:***

Protein purification, HPLC (affinity, gel filtration and ion exchange), preparative column chromatography, membrane filtration, dialysis, SDS-PAGE, Western blot and cell protein overexpression in hepatocytes using adenoviral vectors (WT and DN)

### ***Additional techniques:***

- UV spectroscopy and fluorescence spectroscopy
- Fluorescence microscopy and confocal microscopy
- Quantification of radio-isotopes (<sup>14</sup>C, <sup>3</sup>H) using liquid scintillation counting, preparation of Radioactive substrates for metabolic studies.
- Familiar with animal handling procedures according to ethically approved protocols
- Metabolite determination and enzyme activity determination

## **F. Research Experience:**

### **1) Participation in the National Research project Coronary Artery Disease in Saudi Arabia follows:**

- a. Receiving the subject samples (18,000 samples)
- b. Analyzing the samples for the following biochemical indices: (Glucose, Cholesterol, Triglycerides, HDL, and LDL)
- c. Stabilizing the quality control for all the above analysis
- d. Analyzing the samples for the special tests e.g.:
  - Chlamydia Trachomatis IgG, IgM
  - H – Pylori IgG, IgM
  - Mycoplasma Pneumonia IgG, IgM

**Principal Investigator: Prof. Mansuor Al Nazha**

**2) Participated in analyzing the samples and other technical activities for:**

"Evaluation of Vitamin D from sunlight and milk in the kingdom of Saudi Arabia" Project No. (LG – 2 – 36)

**Principal Investigator: Prof. Saleh H. Sedrni**

**3) Participate in research as principal investigator of the project no 37/435:**

"Naringenin: Erectile Dysfunction Amelioration by Flavonoid in Streptozotocin-induced Diabetic Rats"

**Principal Investigator: Dr. Ziad H. Al-Oanzi**

**4) Participate in research as principal investigator of the project no: 39/647:**

"Protective effect of baicalein alone and co-administered with losartan on doxorubicin-induced hepatotoxicity and nephrotoxicity in rats"

**Principal Investigator: Dr. Ziad H. Al-Oanzi**

**5) Participate in research as principal investigator of the project no: 40/97:**

"Effects of single and combined losartan and thymoquinone treatments on hypercholesterinemia-induced cardiac toxicity via oxidative Stress and Inflammatory process in rats"

**Principal Investigator: Dr. Ziad H. Al-Oanzi**

**6) Participate in research as principal investigator of the project no: DSR-2021-01-0204:**

"The effects of baicalein alone and in combination with losartan on DOX-induced nephrotoxicity in rats"

**Principal Investigator: Dr. Ziad H. Al-Oanzi**

**G. List of publications in Journals:**

1. **Al-oanzi ZH**, Tuck SP, Raj N, Harrop JS, Summers GD, Cook DB, Francis RM, Datta HK. Assessment of vitamin D status in male osteoporosis. *Clinical Chemistry* 2006 Feb;52(2):248-54.

2. **Al-oanzi ZH**, Tuck SP, Mastana SS, Summers GD, Cook DB, Francis RM, Datta HK. Vitamin D-binding protein gene microsatellite polymorphism influences BMD and risk of fractures in men. *Osteoporosis Int.* 2008 Jul;19(7):951-60.
3. Arden C, Petrie JL, Tudhope SJ, **Al-Oanzi Z**, Claydon AJ, Beynon RJ, Towle HC, Agius L. Elevated glucose represses liver glucokinase and induces its regulatory protein to safeguard hepatic phosphate homeostasis. *Diabetes.* 2011 Dec;60(12):3110-20
4. Arden C, Tudhope SJ, Petrie JL, **Al-Oanzi ZH**, Cullen KS, Lange AJ, Towle HC, Agius L. Fructose 2,6-bisphosphate is essential for glucose-regulated gene transcription of glucose-6-phosphatase and other ChREBP target genes in hepatocytes. *Biochem J.* 2012 Apr 1;443(1):111-23.
5. Petrie JL, **Al-Oanzi ZH**, Arden C, Tudhope SJ, Mann J, Kieswich J, Yaqoob MM, Towle HC, Agius L. Glucose induces protein targeting to glycogen in hepatocytes by fructose 2,6-bisphosphate-mediated recruitment of MondoA to the promoter. *Mol Cell Biol.* 2013 Feb;33(4):725-38.
6. Cullen KS, **Al-Oanzi ZH**, O'Harte FP, Agius L, Arden C. Glucagon induces translocation of glucokinase from the cytoplasm to the nucleus of hepatocytes by transfer between 6-phosphofructo 2-kinase/fructose 2,6-bisphosphatase-2 and the glucokinase regulatory protein. *Biochim Biophys Acta.* 2014 Jun;1843(6):1123-34
7. **Al-Oanzi ZH**, Fountana S, Moonira T, Tudhope SJ, Petrie JL, Alshawi A, Patman G, Arden C, Reeve HL, Agius L. Opposite effects of a glucokinase activator and metformin on glucose-regulated gene expression in hepatocytes. *Diabetes, Obesity and Metabolism.* 2017 Feb 16. doi: 10.1111/dom.12910. [Epub ahead of print]
8. **Al-Oanzi ZH**. Naringenin: Erectile Dysfunction Ameliorates by Flavonoid in Streptozotocin-induced Diabetic Rats. *J Food Biochem.* 2019 Jul;43(7):e12885. doi: 10.1111/jfbc.12885. Epub 2019 May 7
9. Barr, Daniel; Szennyes, Eszter; Bokor, Eva; **Al-Oanzi, Ziad**; Moffatt, Colin; Kun, Sandor; Docsa, Tibor; Sipos, Adam; Davies, Matthew; Mathomes, Rachel; Snape, Timothy; Agius, Lorraine; Somsak, Laszlo; Hayes, Joseph. Identification of C- $\beta$ -D-glucopyranosyl azole type inhibitors of glycogen phosphorylase that reduce glycogenolysis in hepatocytes: in silico design, synthesis, in vitro kinetics and ex-vivo studies. *ACS Chem Biol.* 2019 Jul 19;14(7):1460-1470. doi: 10.1021/acscchembio.9b00172. Epub 2019 Jun 19
10. Moonira T, Chachra SS, Ford BE, Marin S, Alshawi A, Adam-Primus NS, Arden C, **Al-Oanzi ZH**, Foretz M, Viollet B, Cascante M, Agius L. Metformin lowers glucose 6-phosphate in hepatocytes by activation of glycolysis downstream of glucose phosphorylation. *J Biol Chem.* 2020 Jan 23. pii: jbc.RA120.012533. doi: 10.1074/jbc.RA120.012533. [Epub ahead of print]
11. **Ziad H. Al-Oanzi**, Abdelbaset M. Elsbali, Nabil K. Alruwaili, Nasser HadalAlotaibi, Khalid S. Alharbi, Abdulaziz I. Alzarea, Bader H. Alsuwayt, Maher M. Al-Enazi. Protective effect of baicalein alone and losartan–baicalein combination therapy on doxorubicin-induced hepatotoxicity in rats. *Toxicol. Environ. Health Sci.* 12, 45–54 (2020). <https://doi.org/10.1007/s13530-020-00037-7>

12. Elsbali, A. M., Almaeen, A. H., Alduraywish, A. A., Al-Oanzi, Z., Aldosari, A. A., Ahmed, H. G., & El-Metwally, T. H. (2021). Changes in Plasma Ghrelin, Leptin, Insulin and Glucagon-Like Peptide-1 Levels Are Correlated to Body Mass Index among Patients with Early Asymptomatic Non-Alcoholic Fatty Liver. *International Medical Journal*, 28(1).
13. Zafar A, Alruwaili NK, Imam SS, Alsaidan OA, Alharbi KS, Yasir M, Elmowafy M, Mohammed EF, **Al-Oanzi ZH**. Formulation of Chitosan-Coated Piperine NLCs: Optimization, In Vitro Characterization, and In Vivo Preclinical Assessment. *AAPS PharmSciTech*. 2021 Aug 31;22(7):231. doi: 10.1208/s12249-021-02098-4.PMID: 34477999
14. El-Aassar MR, Ibrahim OM, **Al-Oanzi ZH**. Biotechnological Applications of Polymeric Nanofiber Platforms Loaded with Diverse Bioactive Materials. *Polymers* (Basel). 2021 Oct 28;13(21):3734. doi: 10.3390/polym13213734.PMID: 34771291
15. Alzarea, S. I., Alhassan, H. H., Alzarea, A. I., **Al-Oanzi, Z. H.**, & Afzal, M. (2022). Antidepressant-like Effects of Renin Inhibitor Aliskiren in an Inflammatory Mouse Model of Depression. *Brain Sciences*, 12(5), 655.
16. Elsbali, A. M., Al-Soud, W. A., **Al-Oanzi, Z. H.**, Qanash, H., Alharbi, B., Binsaleh, N. K., ... & Adnan, M. (2022). Cytotoxic Activity, Cell Cycle Inhibition, and Apoptosis-Inducing Potential of *Athyrium hohenackerianum* (Lady Fern) with Its Phytochemical Profiling. *Evidence-Based Complementary and Alternative Medicine*, 2022.
17. **Al-Oanzi, Z. H.**, Alenazy, F. O., Alhassan, H. H., El-Aassar, M. R., Alzarea, A. I., Alzarea, S. I., ... & Al-Enazi, M. M. (2022). Effects of Thymoquinone Alone or in Combination with Losartan on the Cardiotoxicity Caused by Oxidative Stress and Inflammation in Hypercholesterolemia. *Journal of Cardiovascular Development and Disease*, 9(12), 428.
18. **Ziad H Al-Oanzi**. (2023). The effects of baicalein alone and in combination with losartan on DOX-induced nephrotoxicity in rats. *Pak. J. Pharm. Sci.*, Vol.36, No.1, January 2023, pp.031-038
19. Elsbali, A. M., Al-Soud, W. A., Mousa Elayyan, A. E., **Al-Oanzi, Z. H.**, Alhassan, H. H., Mohamed, B. M., ... & Adnan, M. (2023). Integrating network pharmacology approaches for the investigation of multi-target pharmacological mechanism of 6-shogaol against cervical cancer. *Journal of Biomolecular Structure and Dynamics*, 1-17.
20. Ullah, M. I., Alameen, A. A. M., **Al-Oanzi, Z. H.**, Eltayeb, L. B., Atif, M., Munir, M. U., & Ejaz, H. (2023). Biological Role of Zinc in Liver Cirrhosis: An Updated Review. *Biomedicines*, 11(4), 1094.
21. **Al-Oanzi, Z. H.**, Alenazy, F. O., Alhassan, H. H., Alruwaili, Y., Alessa, A. I., Alfarm, N. B., ... & Alghofaili, S. I. (2023). The Role of Vitamin D in Reducing the Risk of Metabolic Disturbances That Cause Cardiovascular Diseases. *Journal of Cardiovascular Development and Disease*, 10(5), 209.
22. Ford, B. E., Chachra, S. S., Rodgers, K., Moonira, T., **Al-Oanzi, Z. H.**, Anstee, Q. M., ... & Agius, L. (2023). The GCKR-P446L gene variant predisposes to raised blood cholesterol and lower blood glucose in the P446L mouse—a model for GCKR rs1260326. *Molecular Metabolism*, 72, 101722.

23. **Al-Oanzi ZH** and Elzouki A-N (2023) Editorial: The role of vitamin D in reducing the risk of metabolic syndromes. *Front. Endocrinol.* 14:1293262.  
doi: 10.3389/fendo.2023.1293262

#### H. Poster or Oral Presentation in International Conferences:

1. Vitamin D binding protein gene (TAAA)n-Alu element polymorphism and its association with bone density and osteoporosis in men. S.P. Tuck, **Z.H. Al-oanzi**, S.S. Varanasi, N. Raj, G.D. Summers, H.K. Datta, R.M. Francis. *Rheumatology Conference, Volume 43, Issue Supplement S2, Page 54, 2004*
2. (TAAA)n-Alu Element Polymorphism in Vitamin D Binding Protein Gene and its Association with Bone Density and Osteoporosis in Men. **Z. H. Al-oanzi**, S. P. Tuck, S. S. Varanasi, N. Raj, J. S. Harrop, G. D. Summers, D. B. Cook, R. M. Francis, H. K. Datta. 26th Annual Meeting of the American Society for Bone and Mineral Research (*ASBMR 26th Annual Meeting SU183*), Seattle, WA, USA, Volume 19, Issue Supplement S1, pages S249, 2004.
3. Assessment of Total and 'Free' Circulatory 25-hydroxyvitamin D and 1, 25 dihydroxyvitamin D3 Status in Men with Osteoporosis. **Z. H. Al-oanzi**, S. P. Tuck, S. S. Varanasi, N. Raj, J. S. Harrop, G. D. Summers, D. B. Cook, R. M. Francis, H. K. Datta. 26th Annual Meeting of the American Society for Bone and Mineral Research (*ASBMR 26th Annual Meeting M581*), Seattle, WA, USA, Pages S483, 2004.
4. The insulin-independent glucose-induction of the hepatic gluconeogenic enzyme glucose 6-phosphatase involves distinct metabolic pathways and transcription factors. **Z.H. Al-Oanzi**, J.L. Petrie, S. Tudhope, C. Arden, L. Agius. 48<sup>th</sup> EASD Annual Meeting of the European Association for the Study of Diabetes, Berlin-Germany, 1-5 October. *Diabetologia*, Volume 55, Supplement 1, Page S251, 2012
5. The role of the hexosamine biosynthesis pathway in glucose regulation of hepatic gene expression. **ZH Al-Oanzi**, C Arden and L Agius. Diabetes UK Professional Conference 2012, Scottish Exhibition & Conference Centre (SECC), Glasgow, Scotland, 7 March - 9 March 2012, Volume 29, Issue Supplement s1 Page 42
6. Hepatic uric acid production is dependent on the ratio of expression of glucokinase to its regulatory protein, GCKR. L Agius, S Tudhope, J Petrie and **ZH Al-Oanzi**. Diabetes UK Professional Conference 2012, Scottish Exhibition & Conference Centre (SECC), Glasgow, Scotland, 7 March - 9 March 2012, Volume 29, Issue Supplement s1 Pages 44-45
7. A role for glucagon in the post-translational regulation of hepatic glucokinase activity. C Arden, KS Cullen, **ZH Al-Oanzi**, FP O'Harte and L Agius. Diabetes UK Professional Conference 2013, Manchester centre convention complex, Manchester, UK, 13 - 15 March 2013, Volume 30, Issue Supplement s1 Pages 4-5
8. Mechanism of action of metformin in regulating hepatic gene expression. **ZH Al-Oanzi**, S Fountana and L Agius. Diabetes UK Professional Conference 2015, the ExCeL, London, England, 11 March - 13 March 2015, Volume 32, Issue Supplement s1 Pages 6-18
9. Naringenin attenuates testicular damage and oxidative stress in streptozotocin-induced

- diabetic rats. Maher Al-Enazi and **Ziad Al-oanzi**. Diabetes UK Professional Conference 2016, the SECC, Glasgow, Scotland, 02 March - 04 March 2016, Volume 33, Issue Supplement s1 Pages...
10. Metformin action in hepatocytes is not mimicked by selective activation of AMP-activated protein kinas. TabassumMoonira, **Ziad Al-Oanzi**, Catherine Arden, LorraineAgius. Diabetes UK Professional Conference 2016, the SECC, Glasgow, Scotland, 02 March - 04 March 2016, Volume 33, Issue Supplement s1 Pages...
  11. Mechanism of action of metformin in hepatocytes: inhibition of glucotoxicity. TN Moonira , **Z Al-Oanzi** , C Arden , B Viollet and L Agius. Diabetes UK Professional Conference 2017, Manchester centre convention complex, Manchester, UK, 08 - 10 March 2017, Volume 34, Issue Supplement s1 Pages 74-83
  12. Naringenin attenuates sexual impairment and testicular damage in streptozotocin- induced diabetic male rats. **ZH Al-Oanzi**. Diabetes UK Professional Conference 2018, the ExCeL, London, England, 14 March - 16 March 2018, Volume 35, Issue Supplement s1 Pages 37-38
  13. Designing of multilayered bio-nanofibrous scaffolds for accelerating full thickness diabetic wound healing in rat model. ZH Al-Oanzi\*, MR El-Aassar, RG Aly, MM Agwa. Diabetes UK Professional Conference 2023, Exhibition Centre Liverpool, UK, 26-28 April 2023, Volume 40, Issue Supplement 1 Pages 61

## I. Scientific Meetings:

- a. Workshop on Micronutrients and Diet-Related Chronic Diseases in the Arab Gulf countries. Manama, Bahrain (26 – 27 may 1999)
- b. Genetics for all-partnership in action (Training course and update workshop) College of Medicine, king Saud University Riyadh, Saudi Arabia (16-23 November 2000)
- c. Making Biotechnology Happen 2002 International Centre for Life Newcastle, U.K. (14-16 January 2002)
- d. The 5th Pan Arab Congress on Endocrinology and Diabetes King Fahad Cultural Centre,Riyadh, Saudi Arabia (28th February – 2nd March 2004)
- e. 12<sup>th</sup> International Congress of Endocrinology (12<sup>th</sup> ICE) - Lisbon, Portugal (August 31-September 4, 2004)
- f. Development of Diabetes Research Projects: Causes, Management and Complications Workshop. Aljouf University, College of Medicine, Sakaka, Saudi Arabia (November, 15-17, 2015)
- g. Professional Development Workshop (A Leader's Influencing Toolkit), British Council, 02<sup>nd</sup> June 2016 Riyadh, Saudi Arabia



- h. SCIENCE COLLABORATION WORKSHOP GENOMICS AND PRECISION MEDICINE, 22-23 March 2017 at King Saud University and British Council, Riyadh, KSA
- i. The Clinical Laboratory Sciences (CME) of the Saudi International Medlab conference that was held on 19<sup>th</sup> – 21<sup>st</sup> of November 2018
- j. The 4<sup>th</sup> Annual Meeting Conference of Saudi Society for Clinical Chemistry (SSCC) held in Riyadh, 4<sup>th</sup> – 6<sup>th</sup> December 2018
- k. Participated in the lecture on the early stage of diabetes in a scientific symposium on the new on diabetes, held at the Faculty of Applied Medical Sciences, Jouf University on 24 Safar 1438 AH.
- l. Public Health Conference, Covid-19 Response, 25-27 February, 2021. The program is awarded 20 CPD hours (Reference no. A026208). Organized by: Maarefah Management (13450).
- m. 3<sup>rd</sup> Annual Saudi International Vaccination Forum, 09-11 March 2021. This program is awarded 14 CPD hours by the CPD Certification Service (Reference no. A027115). Organized by: Maarefah Management (13450).
- n. 1<sup>st</sup> MENA Metabolic & Genetic Conference, 11-12 June 2021. This program is awarded 6 CPD hours by Dubai Health Authority (Accreditation # DHA/MTS/ACC/21-0677/A). Organized by: Maarefah Management (13450).

## J. Membership:

- Society for Endocrinology
- Society for Diabetes UK
- Society for Diabetologia

## K. Guest Editor and Reviewer:

- Guest Editor: Frontiers: In Endocrinology  
Research Topic proposal:  
**(The role of vitamin D in reducing the risk of metabolic syndromes)**

<https://loop.frontiersin.org/people/1122669/editorial>

- Reviewer: World Journal of Gastrointestinal Oncology  
World Journal of Diabetes

<https://www.wjgnet.com/1948-5204/SeniorScholars?pageNumber=2>

<https://www.wjgnet.com/1948-9358/SeniorScholars?pageNumber=2>

- Review activity for
    - Molecular medicine
    - Toxicology and environmental health sciences
- <https://orcid.org/0000-0003-2197-8481>

## L. Committees

1. Leader of the Instruments and Materials Committee in the College of applied medical Science.
2. Leader of the Committee on teaching assistants scholarships section.
3. Member of the Scientific Research.
4. Member of the Scientific Committee of the Faculty
5. Leader of the Committee on Student Excuses
6. Coordinator of the Committee on Student Scientific Conference
7. Director of the central laboratory at Jouf University

## M. Awards

1. Research excellence in doctoral study by Saudi Arabia Cultural Bureau in London (UK).
2. The British Council Post-doctoral Summer Research Programme (2014)
3. The British Council Post-doctoral Summer Research Programme (2015)

## N. References:

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| Prof. Omar S. Al-Attas<br>Dean for College of Science<br>Professor of Biochemistry<br>College of Science<br>King Saud University<br>P.O.Box: 2455, Riyadh: 11451<br>Saudi Arabia<br>Phone : + 966 1 467-5939<br>Fax : + 966 1 467-5931<br>E-mail : <a href="mailto:omrattas@ksu.edu.sa">omrattas@ksu.edu.sa</a> | Prof. Loranne Agius<br>Professor of Metabolic Biochemistry<br>Biosciences Institute,<br>Newcastle University<br>William Leech Bld, Level 4<br>The Medical School<br>Newcastle upon Tyne NE2 4HH<br>UK<br>Tel +44-191-2087033<br><a href="mailto:loranne.agius@ncl.ac.uk">loranne.agius@ncl.ac.uk</a> |
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