

# KUWAIT UNIVERSITY

## ABDULMOHSEN ABDULRAZZAK HEALTH SCIENCES CENTRE



Genomics, Proteomics and Cellomics Studies Research Unit



### RESEARCH CORE FACILITY (RCF)

### Newsletter Issue No. 5, Dec 2015

#### Supervisors

*Prof. Raja'a Al-Attiah*  
*Prof. Yousuf H. J. Garashi*

#### Director & Principal Investigator

*Prof. Abu Salim Mustafa*

#### Co-Investigators

*Prof. Yunus Luqmani*  
*Prof. Sirkka Asikainen*  
*Prof. Ali Dashti*

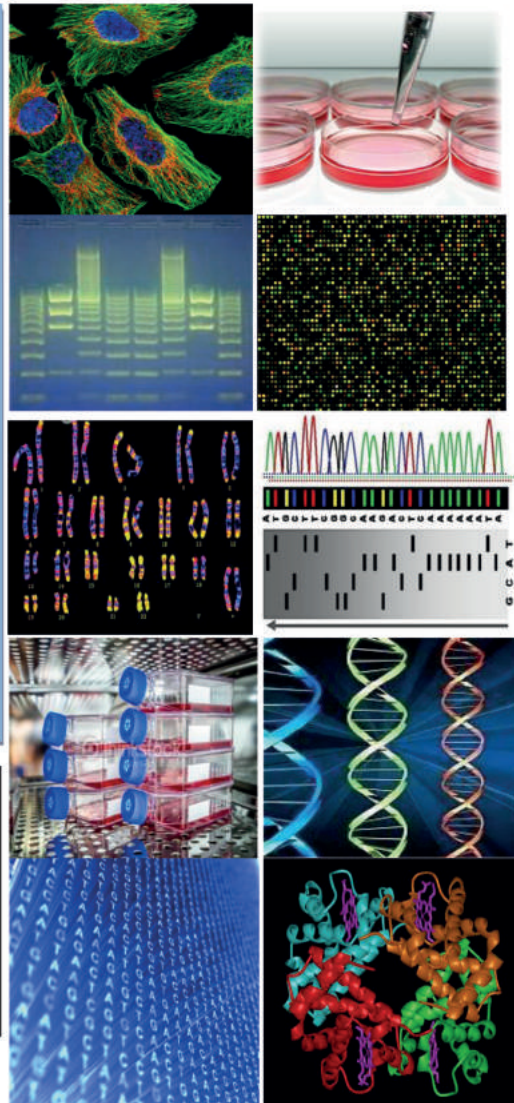
Funded by Kuwait University,  
Research Sector  
Project No. SRUL02/13

#### Chief Editor

*Prof. Abu Salim Mustafa*

#### Assistant Editors

*Sunitha Pramod, Lucy Gabriel,*  
*Mohd Arshad Reza*



### CONTENTS

- *Summary of Achievements in 2014/15.....1*
- *Major Instruments and Techniques.....2*
- *Staff and their Specializations.....3-4*
- *Guidelines for OMICSRU/RCF Utilization.....5*
- *OMICSRU/RCF Utilization in 2014/15.....6*
- *Publications.....7-10*
- *MSc Thesis & PhD Dissertation.....11*
- *Workshops Conducted.....12-13*
- *What's New?.....14*



# Summary of Achievements in 2014/2015

The Research Unit for Genomics, Proteomics and Cellomics Studies (OMICSRU) / Research Core Facility (RCF) is a specialized research unit at the Health Sciences Centre (HSC), Kuwait University. It's primary aim is to facilitate basic and clinical research in Genomics, Proteomics and Cell Biology. and in teaching and training of staff and students at HSC.



**Prof. Raja'a Al-Attiah**  
OMICSRU/RCF Supervisor

## 1. Effective utilization of facilities and capabilities

In 2014-2015, the facilities in OMICSRU/RCF were utilized by staff/researchers from 30 departments of 10 Faculties/Institutions in Kuwait:

- staff members and students of the four Faculties of HSC (Medicine, Dentistry, Pharmacy and Allied Health Sciences)
- Faculty of Science, Kuwait University.
- Staff from Kuwait Institute of Scientific Research, Kuwait Cancer Centre, Kuwait Genetic lab and Kuwait Board for Resident Training/Kuwait Institute of Medical Specialization (KIMS), and the Ministry of Health hospitals [MOH], Kuwait.

A total of 35, 516 samples were analyzed from 1,462 requests



**Prof. Yousuf H. J. Garashi**  
OMICSRU/RCF Supervisor

## 2. Research output and international collaborations:

- Full-length Publications (n= 30: 14 in Q1 journals)
- Abstracts published in conference proceedings (n=29)
- In the 19<sup>th</sup> Posterday Conference of HSC held in 2014, three awards given to students (one for undergraduate and two for MSc research) were awarded for posters acknowledging the grants supporting OMICSRU/RCF.
- Researchers utilizing OMICSRU collaborated internationally with scientists from USA, China, Brazil, Finland, India, Sweden and UK.



**Prof. Abu Salim Mustafa**  
Principal Investigator (PI)

## 3. Teaching and training of students and staff

The OMICSRU/RCF has been an important resource to infuse research culture in undergraduate (BMed, BMBCh and BPharm) and graduate students (MSc and PhD) of HSC, and postgraduate trainees (Residents) of Kuwait Board/KIMS. During the present report period, teaching and 33 training activities were conducted for

- 20 undergraduates
- 35 graduates (27 MSc and 8 PhD students)
- 8 postgraduates (Kuwait Board Residents)
- 33 staff (Technical and Academic)



**Prof. Yunus Luqmani**  
Co-Investigator (Co-I)

## 4. Increasing awareness of OMICSRU/RCF

- 17 workshops/seminars were conducted
- 12 equipment-related e-mails were sent to staff and students of HSC and other institutions
- Tours were organized for the medical, dental and pre-professional students of HSC.



**Prof. Sirkka Asikainen**  
Co-Investigator (Co-I)



**Prof. Ali Dashti**  
Co-Investigator (Co-I)

*The continued financial support from the Kuwait University Research Sector (Grant SRUL02/13) is gratefully acknowledged.*



## MAJOR INSTRUMENTS & TECHNOLOGIES AVAILABLE AT OMICSRU/RCF

### GENOMICS

1. ABI 3130 XL Genetic Analyzer: DNA Sequencing & Fragment Analysis
2. CEQ™8000 Genetic Analysis System: DNA Sequencing & Fragment Analysis
3. Illumina MiSeq: Next Generation Sequencing
4. ABI 7500: Real-Time PCR
5. ABI 7900HT: Real-Time PCR
6. Affymetrix GeneChip: DNA Microarray
7. Agilent DNA Microarray: CGH & Gene Expression
8. UltraLum Omega 16vS: Gel Documentation
9. UVP - Biospectrum®AC: Gel & Blot Imaging
10. BioradExperion™: Automated Electrophoresis
11. Agilent 2100 Bioanalyzer: Chip Electrophoresis
12. Thermal Cyclers: Endpoint PCR
13. Mermade – 12: Oligonucleotide Synthesis
14. Electrophoresis System for Agarose Gels

### CELL BIOLOGY & MICROSCOPY

1. LSM 510 Meta: Confocal Microscopy
2. LSM 700: Confocal Microscopy
3. Culture Cell Imaging System
4. In vitro Fertilization System
5. Cell Observer: for Live Cell Imaging
6. PALM Microbeam: Laser Micro-dissection
7. Axio Imager: Fluorescence Microscopy
8. Optima L-100: Ultracentrifuge
9. Automated Karyotyping: Multicolor FISH
10. Axiovert 40: Phase Contrast Microscope

### PROTEOMICS

1. ABI 4800 MALDI TOF/TOF Analyzer: Mass Spectrometry
2. Symphony Peptide Synthesizer
3. ProteomeLab™ PF 2D: Protein Fractionation
4. ProteomeLab™ PF 800: Protein Characterization
5. Fluoroskan: Fluorescence Reader
6. Multiskan: Spectrophotometer
7. Appliskan: Luminescence, Fluorescence and Absorbance Reader
8. SDS-PAGE + Western Blotting System: Protein Analysis
9. BioTek Epoch: Low-volume (2 µl) Spectrophotometer for Proteins, RNA, DNA
10. ELISA Washer and Reader: Immunoassays
11. Dark Room: Developing Films

### SAMPLE PREPARATION

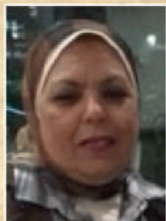
1. Soniprep 150 plus: Sonicator
2. Omni THq: Homogenizer
3. QIAcube: DNA, RNA and Protein Extraction
4. Biorobot M48: High-throughput Nucleic Acid Extraction
5. Biorobot Universal : High-throughput Sample Preparation
6. Autoclave
7. Ultrapure Water Purification System Elix 10

### FLOW CYTOMETRY & TISSUE CULTURE

1. Cytomics FC 500: Flowcytometry
2. Vi-Cell Series: Cell Viability Analyzers
3. Gamma Cell 1000 Elite: Irradiation of Cells
4. Tissue Culture Facility: Four Laminar Flow Hoods and Six CO<sub>2</sub> incubators



## OMICSRU/RCF STAFF



**Dr. FATMA SHABAN**

**PhD Immunology**

**Email: shabanfatma@hotmail.com**

**Phone: 24636596**

**Specialized in Cell Biology (Tissue & Cell Culturing, Recombinant DNA Techniques, Epitope Mapping & Immunological Techniques)**



**Dr. NAZIMA HABIBI**

**PhD Biotechnology**

**Email: nazima@hsc.edu.kw**

**Phone: 24636058**

**Specialized in Genomics (Next Generation Sequencing, Microarray and Bioinformatics)**



**Ms. FAIZA RASHEED**

**M.Sc. Biotechnology**

**Email: faiza@hsc.edu.kw**

**Phone: 24636058**

**Specialized in Genomics (Real Time PCR, Oligonucleotide Synthesis, Sample preparation using Biorobots)**



**Ms. BETTY TEENA THOMAS**

**M.Sc. Biotechnology**

**Email: betty@hsc.edu.kw**

**Phone: 24636058**

**Specialized in Proteomics (Protein Purification, Protein Fractionation and Mass Spectroscopy)**



**Ms. SUNITHA PRAMOD**

**M.Sc. Microbiology**

**Email: sunitha@hsc.edu.kw**

**Phone: 24636596**

**Specialized in Cell Biology (Flow Cytometry, Fluorescence Microscopy, Live Cell Imaging and Tissue culture)**



**Ms. JUCY GABRIEL**

**M.Sc. Biotechnology**

**Email: jucyjnu@yahoo.com**

**Phone: 24636596**

**Specialized in Cell Biology (Confocal Microscopy, Immunological Assays, ELISA and Western Blotting)**



## OMICSRU/RCF STAFF



**Mr. NUMEER KADUNGATHAYIL**

**B. Tech Biotechnology**

**Email: numeer@hsc.edu.kw**

**Phone: 24636058**

**Specialized in Genomics (Karyotyping, Nucleic Acid Extraction and End-point PCR)**



**Mr. RIYAS SULAIMAN**

**M.Tech Biotechnology**

**Email: riyas@hsc.edu.kw**

**Phone: 24636058**

**Specialized in Genomics (Sanger Sequencing, PCR Fragment Analysis and Mutation Detection)**



**Mr. MOHD WASIF KHAN**

**M.Sc. Biotechnology**

**Email: wasifkhan@hsc.edu.kw**

**Phone: 24636058**

**Specialized in Proteomics (Peptide Synthesis and Purification, Protein Fractionation and Bioinformatics)**



**Mr. MOHD ARSHAD REZA**

**Intg. M.Sc. Biotech & Bioinformatic**

**Email: arshad@hsc.edu.kw**

**Phone: 24636596**

**Specialized in Cell Biology (Confocal microscopy, Flow Cytometry, Spectrophotometry and Fluorometry)**



**Mrs. BADARUNNISA MOHAMMED  
KANDANATH**

**M.Sc. Biotechnology with Bioinformatics**

**Email: badaru1920@gmail.com**

**Phone: 24636058**

**Specialized in Genomics Oligo nucleotide synthesis,  
DNA Sequencing, Mutation analysis**



## Guidelines for OMICSRU/RCF utilization

The OMICSRU/RCF uses the Laboratory Information Management System (LIMS)

The booking form is located at [Access RCF for Equipment Use](http://www.hsc.edu.kw/rcf/) on the OMICSRU/RCF website  
<http://www.hsc.edu.kw/rcf/>

1. Click Login for request.
2. First time users should register by clicking New User Registration.
3. Provide the required information and click Submit Form.
4. On the next day, contact any OMICSRU/RCF staff to receive your password.
5. Login to LIMS through your username and password.
6. Take the cursor to Requests and click the Request Form
7. Generate the LIMS request form for the equipment needed by filling-in the required details.
8. The LIMS form should be duly signed and sealed by the PI.
9. Please bring the LIMS form to the OMICSRU/RCF along with the sample(s). In the absence of LIMS form the sample(s) will not be accepted.
10. After the processing is completed, the user will receive a confirmation e-mail, so that he/she can come and collect the results.
11. The results are provided in CDs, so be sure to bring a CD with you for copying your results (External Hard Disks/Flash memories are not allowed).
12. The results in OMICSRU/RCF database are stored for a maximum period of one month, where applicable. Please collect your results within one month, otherwise they will be removed from the data base.
13. For more information on how to fill-in the LIMS forms, contact any of the OMICSRU/RCF Staff.

***All users are requested to acknowledge the OMICS Research Unit Grant SRUL02/13 in all conference abstracts, theses, research papers and other publications as a condition of using these facilities***

For arranging a visit to the OMICSRU/RCF, or for any enquiries/complaints,  
please contact the Director at

[abusalim@hsc.edu.kw](mailto:abusalim@hsc.edu.kw)

Tel: (246)36426 /36505 Mobile: 66529609



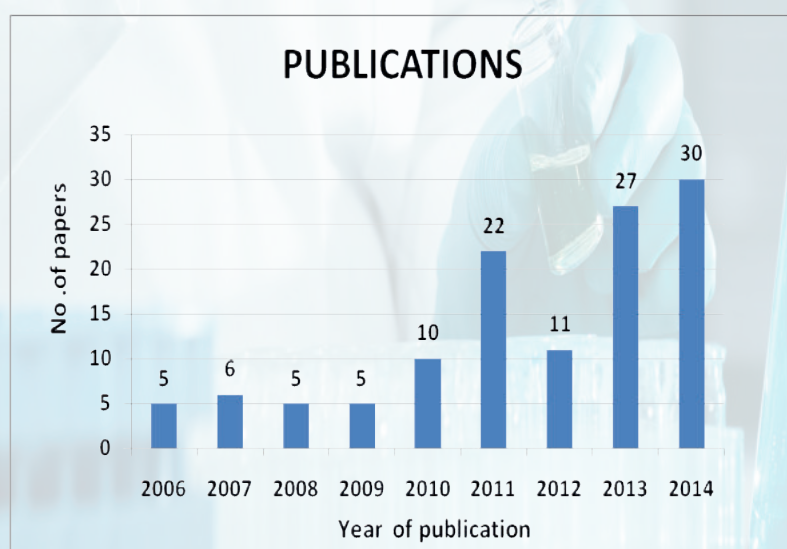
## OMICSRU/RCF UTILIZATION

1<sup>st</sup> April 2014 to 31<sup>st</sup> March 2015

Projects	65
Samples	35516
Researchers	63
MSc students	27
PhD students	8
Undergraduate students	20
Kuwait Board Residents	8

Faculty	Number of requests
Allied Health, HSC	182
Dentistry, HSC	19
Genetic Center, MOH	1
Medicine, HSC	927
Pharmacy, HSC	304
Science, KU	9
Kuwait Board	15

Since its establishment, RCF/OMICSRU has helped to publish 121 papers in scientific journals





## *Full-length papers Published in 2014*

1. Al-Bader M, Kilarkaje N. Effects of bleomycin, etoposide and cisplatin treatment on Leydig cell structure and transcription of steroidogenic enzymes in rat testis. *Eur J Pharmacol.* 2014; 747:150-159. Ranking: Q2, Impact Factor (IF) = 2.684
2. Al-Bader MD, Kilarkaje N, El-Farra A, Al-Abdallah AA. Expression and subcellular localization of metastasis-associated protein 1, its short form, and estrogen receptors in rat placenta. *Reprod Sci.* 2014; pii:1933719114549851. Ranking: Q2, IF = 2.179
3. Al-Hussaini H, Kilarkaje N. Effects of diabetes on retinal pigment epithelial cell proliferation and mitogen-activated protein kinase signaling in dark Agouti rats. *Exp Toxicol Pathol.* 2014; pii: S0940-2993:00148-1. Ranking: Q3, IF = 2.005
4. Al-Sabah S, Alasfar F, Al-Khaledi G, Dinesh R, Al-Saleh M, Abul H. Incretin response to a standard test meal in a rat model of sleeve gastrectomy with diet-induced obesity. *Obes Surg.* 2014; 24:95-101. Ranking: **Q1, IF = 3.739**
5. Al-Sabah S, Al-Fulaij M, Ahmed HA. Selectivity of peptide ligands for the human incretin receptors expressed in HEK-293 cells. *Eur J Pharmacol.* 2014;741:311-315. Ranking: Q2, IF = 2.684
6. Al-Sabah S, Al-Fulaij M, Shaaban G, Ahmed HA, Mann RJ, Donnelly D, Bünemann M, Krasel C. The GIP receptor displays higher basal activity than the GLP-1 receptor but does not recruit GRK2 or Arrestin3 effectively. *PLoS One.* 2014; 9:e106890. Ranking: **Q1, IF = 3.534**
7. Al-Saeedi F J. Study of the cytotoxicity of asiaticoside on rats and tumour cells. *BMC Cancer.* 2014;14:220. Ranking: Q2, IF = 3.319
8. Alwohhaib M, Alwaheeb S, Alyatama N, Dashti AA, Abdelghani A, Hussain N. Single nucleotide polymorphisms at erythropoietin, superoxide dismutase 1, splicing factor, arginine/serine-rich 15 and plasmacytoma variant translocation genes association with diabetic nephropathy. *Saudi J Kidney Dis Transpl.* 2014; 25:577-581.
9. Benov L. Photodynamic therapy: current status and future directions. *Med Princ Pract.* 2014; 24:14-28. Ranking: Q3, IF = 1.113
10. Bitar MS, Al-Mulla F. CREM/ICERs up-regulation suppresses sponge endothelial CRE-HIF-1 $\alpha$ -VEGF-dependent signaling and impairs angiogenesis in type 2 diabetes. *Dis Model Mech.* 2014; pii: dmm.017145. Ranking: **Q1, IF = 5.537**
11. Dashti AA, Vali L, El-Shazly S, Jadaon MM. The characterization and antibiotic resistance profiles of clinical *Escherichia coli* O25b-B2-ST131 isolates in Kuwait. *BMC Microbiol.* 2014;14:214. Ranking: Q2, IF = 2.976
12. Ezeamuzie CI, El-Hashim AZ, Renno WM, Edafigho IO. Antiallergic and antiasthmatic effects of a novel enhydrazinone ester (CEE-1): inhibition of activation of both mast cells and eosinophils. *JPharmacolExp Ther.* 2014; 350:444-454. Ranking: **Q1, IF = 3.855**
13. Ezeamuzie CI, Zamil H, Al-Baghli H, Edafigho IO. Pharmacological evaluation of a novel enhydrazone ester (CEE-1) as a dual inhibitor of the release of pro-inflammatory cytokines and prostanoids from human monocytes. *Advances in Bioscience and Biotechnology.* 2013; 4:54-63.
14. Ghadhanfar E, Al-Bader M, Turcani M. Wistar rats resistant to the hypertensive effects of ouabain exhibit enhanced cardiac vagal activity and elevated plasma levels of calcitonin gene-related peptide. *PLoS One.* 2014; 9:e108909. Ranking: **Q1, IF = 3.5**
15. Henkel AW, Alali H, Devassy A, Alawadi MM, Redzic ZB. Antagonistic interactions between dexamethasone and fluoxetine modulate morphodynamics and expression of cytokines in astrocytes. *Neuroscience.* 2014; 280:318-27. Ranking: Q2 IF = 3.327
16. Kilarkaje N, Al Hussaini H, Al-Bader MM. Diabetes-induced DNA damage and apoptosis are associated with poly (ADP ribose) polymerase 1 inhibition in the rat testis. *Eur J Pharmacol.* 2014;737:29-40. Ranking: Q2, IF = 2.684



17. Kilarkaje N, Al-Bader MM. Diabetes-induced oxidative DNA damage alters p53-p21CIP1/Waf1 signaling in the rat testis. *Reprod Sci.* 2014; DOI: 10.1177/1933719114533729. Ranking: Q3, IF = 2.179
18. Kilarkaje N. Effects of combined treatment of  $\alpha$ -tocopherol, L-ascorbic acid, selenium and zinc on bleomycin, etoposide and cisplatin-induced alterations in testosterone synthesis pathway in rats. *Cancer Chemother Pharmacol.* 2014; 74:1175-1189. Ranking: Q2, IF = 2.571
19. Mouihate A. TLR4-mediated brain inflammation halts neurogenesis: impact of hormonal replacement therapy. *Front Cell Neurosci.* 2014; 8:1-12. **Ranking: Q1, IF = 4.289**
20. Mustafa AS. Characterization of a cross-reactive, immunodominant and HLA-promiscuous epitope of *Mycobacterium tuberculosis*-specific major antigenic protein PPE68. *PLoS One.* 2014; 9:e103679. Ranking: **Q1, IF = 3.5**
21. Mustafa AS. The future of *Mycobacterium tuberculosis*-specific antigens/peptides tuberculin skin testing for the diagnosis of tuberculosis. *J Mycobact Dis* 2014; 4:1000e127.
22. Mustafa AS. T-Helper 1, T-Helper 2, pro-inflammatory and anti-inflammatory cytokines in tuberculosis. *Int J Pharm Med & Bio Sc.* 2014; 3:1-14.
23. Mustafa AS. BCG, pros & cons & new improved vaccines for tuberculosis. *Textbook of Biochemistry and Human Biology* 2014; pp. 1341-1374.
24. Odeh AM, Craik JD, Ezzeddine R, Tovmasyan A, Batinic-Haberle I, Benov LT. Targeting mitochondria by Zn (II) N-alkylpyridylporphyrins: the impact of compound sub-mitochondrial partition on cell respiration and overall photodynamic efficacy. *PLoS One.* 2014; 9:e108238. Ranking: **Q1, IF = 3.534**
25. Opazo A, Vali L, Al Obaid K, Dashti AA, Amyes SG. Novel genetic structure harbouring blaPER-1 in ceftazidime-resistant *Acinetobacter baumannii* isolated from Kuwait. *Int J Antimicrob Agents.* 2014; 43:383-393. Ranking: **Q1, IF = 4.415**
26. Söderling E, Elsalhy M, Honkala E, Fontana M, Flannagan S, Eckert G, Kokaras A, Paster B, Tolvanen M, Honkala S. Effects of short-term xylitol gum chewing on the oral microbiome. *Clin Oral Invest.* 2014; DOI: 10.1007/s00784-014-1229-y. Ranking: **Q1, IF = 2.312**
27. Tovmasyan A, Carballal S, Ghazaryan R, Melikyan L, Weitner T, Maia CG, Reboucas JS, Radi R, Spasojevic I, Benov L, Batinic-Haberle I. Rational design of superoxide dismutase (SOD) mimics: the evaluation of the therapeutic potential of new cationic Mn porphyrins with linear and cyclic substituents. *Inorg Chem.* 2014; 53:11467-11483. Ranking: **Q1, IF = 4.794**
28. Tovmasyan A, Reboucas JS, Benov L. Simple biological systems for assessing the activity of superoxide dismutase mimics. *Antioxid Redox Signal.* 2014; 20:2416-2436. Ranking: **Q1, IF=7.8**
29. Wallmeier J, Al-Mutairi DA, Chen CT, Loges NT, Pennekamp P, Menchen T, Ma L, Shamseldin HE, Olbrich H, Dougherty GW, Werner C, Alsabah BH, Köhler G, Jaspers M, Boon M, Griesse M, Schmitt-Grohé S, Zimmermann T, Koerner-Rettberg C, Horak E, Kintner C, Alkuraya FS, Omran H. Mutations in CCNO result in congenital mucociliary clearance disorder with reduced generation of multiple motile cilia. *Nat Genet.* 2014; 46:646-651. Ranking: **Q1, IF = 29.648**
30. Yousif MH, Makki B, El-Hashim AZ, Akhtar S, Benter IF. Chronic treatment with Ang-(1-7) reverses abnormal reactivity in the corpus cavernosum and normalizes diabetes-induced changes in the protein levels of ACE, ACE2, ROCK1, ROCK2 and omega-hydroxylase in a rat model of type 1 diabetes. *J Diabetes Res.* 2014; 2014:1-10. Ranking: Q3, IF = 2.164



## ***Abstracts Published in 2014***

1. Achoui M, Shorbaji K, Mustafa AS, Al-Nakib W. Microbial biodiversity and viral contaminants of drinking water in Kuwait. Health Science Centre Poster Conference, 19:P63:2014.
2. Al Shimali HM, Al- Musaileem AF, Rao MS, Khan KM. Low dose exposure to lead during pregnancy effects spatial learning and neurogenesis in hippocampus in young rats. Health Science Centre Poster Conference, 19:P6:2014.
3. Al-Balool H H, Farouk A E, Al Ben AM, Alahmad A, Alaqeel A A. Genetic variation in neurofibromatosis type 1(NF1), and possible genotype-phenotype correlation in Kuwait. 5th International Conference of medical genetics, Kuwait Ministry of Health, Kuwait, May 2014.
4. Al-Hussaini H, Kilarkaje N. Diabetes induced retinal pigment epithelial cell proliferation occurs concomitantly with up regulated ERK and down regulated JNK signaling in rats retina. Health Science Centre Poster Conference, 19:P5:2014.
5. Al-Sabah S, Al-Flaij M, Ahmed HA, Bunemann M, Krasel C. Differential signaling by the human incretin receptors. Health Science Centre Poster Conference, 19:P134:2014.
6. Al-Saeedi FJ. Antitumor effects of asiaticoside on MCF-7 Breast cancer cells and nude mouse Xenografts. Health Science Centre Poster Conference, 19:P100:2014.
7. Al-Temaimi RA, Al-Serri AE, Abdeen SM, Olusi SO. HCV genotypes, IL 28 B and PNPLA3 polymorphisms in hepatitis C patients from Kuwait. Health Science Centre Poster Conference, 19:P118:2014.
8. Al-Turab M, Chehadeh W, Al- Nakib W. Genetic diversity of detected human metapneumovirus in Kuwait. Health Science Centre Poster Conference, 19:P39:2014.
9. Asadzadeh M, Ahmad S, Al- Sweih N, Khan ZU. Non- endemic genotypes of *Candida albicans* cause candidemia cases in Kuwait as revealed by multilocus sequence typing. Health Science Centre Poster Conference, 19:P 67:2014.
10. Charara M, Benov L, Craik J. Shedding some light on Zn (II) N-alkylpyridylporphyrin based photosensitizers. Health Science Centre Poster Conference, 19:P17:2014.
11. Dashti A A, Vali L, Mathew F. Clonal spread of hospital acquired methicillin sensitive *Staphylococcus aureus* (MSSA) isolates with reduced susceptibility to chlorhexidine. European Society of Clinical Microbiology and Infectious diseases, Copenhagen, Denmark, 25<sup>th</sup>-28<sup>th</sup> April 2015.
12. El-Salhy M, Soderling E, Honkala E, Varghese A , Honkala S. The effect of 5 weeks xylitol consumption on some members of oral microflora. Health Science Centre Poster Conference, 19:P39:2014.
13. Faid I, Abdel Ali AA, Verghese S, Narayana K. Resveratrol modulates diabetes induced alterations in c-Jun N-terminal kinase signaling in the testis. Health Science Centre Poster Conference, 19:P8:2014.
14. Gabriel J. Pramod S, Shaban F, Mustafa AS. Confocal laser microscopy: A comparative study of applications for two confocal machines. Health Science Centre Poster Conference, 19:P76:2014.
15. Hasan F, Khajah M, Mathew P, Luqmani Y. Involvement of voltage-gated sodium channels (VGSCs) in the metastatic behavior of endocrine resistant breast cancer cells. 5<sup>th</sup> Kuwait International Pharmacy Conference, February 2015.
16. Hedaya OM, Mathew PM, Hassan F, Phillips OA, Luqmani YA. Anti-proliferative activity of 5. Acetamido-oxazolidinone derivatives. Health Science Centre Poster Conference, 19:P114:2014.
17. Honkala E, El-Salhy M, Soderling E, Varghese A, Honkala S. Association between ICDAS scores in primary and permanent teeth. Health Science Centre Poster Conference, 19:P 40:2014.
18. Kadungothayil N, Pramod S, Mustafa AS. Determination of bacterial cell number and viability using colony forming unit method and flow cytometry. Health Science Centre Poster Conference, 19:P79:2014.



19. Kalakh S, Mouihate A. The anti-inflammatory effect of progesterone is dissociated from remyelination: a look at the maturation of oligodendrocyte progenitor cells. Health Science Centre Poster Conference, 19:P153:2014.
20. Kamar MM, Ghannam S, Rao MS, Redzie Z. Small blood vessels of the brain are surrounded by perivascular spaces: potential pathways for flow of brain interstitial fluid. Health Science Centre Poster Conference, 19:P 154. 2014.
21. Karched M, George S, Bhardwaj R, Philip P, Inbamani A, Asikainen SE, Al-Khabbaz AK. Real time PCR quantification of periodontal pathogens in diabetic Kuwaiti children. Health Science Centre Poster Conference, 19:P42:2014.
22. Khajah M, Almohri I, Mathew P, Luqmani Y. Enhanced invasive ability of endocrine resistant breast cancer cells after a brief exposure to extracellular alkaline pH. Tumor microenvironment and signaling, Heidelberg, Germany, May 2014.
23. Luqmani YA. A 'switch' model for de-repression of translation of transfected RNA heteroduplexes in breast cancer cells. 4<sup>th</sup> World Congress on Cancer Science and Therapy, Chicago, October 2014.
24. Mustafa AS. Anti – Lyme IgM and IgG antibodies in sera of human subjects residing in Kuwait. Health Science Centre Poster Conference, 19:P85:2014.
25. Narayana K, Al- Hussaini H, Al- Bader M. DNA damage and apoptosis in the testis are associated with poly( ADP-ribose) polymerase-1 inhibition in diabetic rat. Health Science Centre Poster Conference, 19:P11:2014.
26. Osman A, Al-Mutairi A, Al-Haj A, Habibi N, Hussain F, Mustafa AS. Molecular characterization of Brucella isolates infecting humans in Kuwait. Health Science Centre Poster Conference, 19:P 86:2014.
27. Rasheed F, Habibi N, Sulaiman R, Kadungothayil N, Mustafa AS. Comparative evaluation of oligonucleotides synthesized by ABI 3400 and Mermade 12 DNA synthesizers. Health Science Centre Poster Conference, 19:P48:2014.
28. Thomas B, Kadungothayil N, Mustafa AS. Proteomics analysis of *Escherichia coli* BL21 using the Proteome Lab PF 2D Platform. Health Science Centre Poster Conference, 19:P 39:2014.
29. Vali L, Dashti A, Mathew F. Characterization of clinical methicillin sensitive *Staphylococcus aureus* isolates with reduced susceptibility to chlorhexidine. The third international conference on antimicrobial research, Madrid, Spain, 1-3 October 2014.



## MSC THESES COMPLETED IN 2014

**1. Batool Akbar**

“Does angiotensin-(1-7) exert its anti-cancer activity in breast tumor cells via inhibition of epidermal growth factor receptor tyrosine kinase signalling?”

*Supervisor: Prof. Saghir Akhtar*

**2. Hanan Al-Ali**

Fluoxetine Reverses Cell Hypermobility and Increased Interleukin-2 Levels in Dexamethasone Challenged Astrocytes.

*Supervisor: Dr. Andreas W. Henkel, Co-supervisor: Prof. Zoran Redzic*

**3. Nada Mohammed Sherif**

Protein profiling of estrogen receptor silenced breast cancer cell lines in response to alkaline pH

*Supervisor: Prof Yunus Luqmani*

**4. Saira Salah Moughnie**

Investigation of the antimicrobial activity of novel metalloporphyrin based photosensitizers

*Supervisor: Prof. Ludmil Benov*

**5. Samah Kalakh**

Steroids and Remyelination

*Supervisor: Dr. Abdesalam Moihate*

## PHD DISSERTATION COMPLETED IN 2014

**1. Rasha Al- Khaldi**

Studies on telomere activity in obesity associated studies with special reference to type 2 diabetes.

*Supervisor: Prof. A. O. Mojiminiyi*



## WORKSHOPS/SEMINARS IN 2014

### Workshop/Seminar 1- May 1, 2014

#### Peptide Synthesizer- An Introduction

Speaker: Mr. Peter Bergwall, Support Manager,  
Protein Technologies, Inc

#### Workshop Topics Included:

1. Probe-or gene level expression analysis on all major microarray platforms including Agilent, Affymetrix and Illumina.
2. MicroRNA analysis and identification of gene targets using integrated Target Scan information.
3. Exon splicing analysis using t-tests or multivariate splicing.
4. ANOVA and filtering for transcripts on splicing index.
5. Real-time PCR data analysis.
6. NCBI Gene Expression Omnibus Importer tool for expression datasets.
7. MAGE-TAB Export Tool.

### Workshop/Seminar 2- June 11, 2014

#### Applications of Microarray Technology in Molecular Research and Diagnostics

Speaker: Dr. Andreas Polten, Application Support  
Manager, Agilent Technologies, Germany.

Coordinator: Prof Abu Salim Mustafa

Sponsors: OMICSRU/RCF and Al-Essa Co.

#### Workshop/Seminar Topics Included:

1. The Basics of microarray technology
2. Applications of microarray technology in molecular research
3. The various potentials of microarrays for disease diagnosis

### Workshop/Seminar 3- September 8, 2014

#### Microarray Technology

Speaker: Dr. Nazima Habibi, Research Associate,  
OMICSRU.

#### Workshop/Seminar Topics Included:

1. Introduction and Applications of Microarray Technology using Agilent and Affymetrix Platforms

### Workshop/Seminar 4- September 29, 2014

#### Biomarker Discovery Using 2D HPLC, 2D Protein Microarray and Serological Profiling

Speaker: Dr. Timothy Barder, Eprogen, USA

#### Workshop/Seminar Topics Included:

1. Novel Applications of 2D HPLC in Biomarker discovery
2. 2D Protein Microarrays prepared from Cancer Cell lysates
3. Serological immune response profiling of patients using Cancer Cell lysates.



#### **Workshop/Seminar 5 -October 13, 2014**

##### **Recombinant DNA Technology: Principle, Applications & Potentials**

**Speaker:** Mr. Mohd Wasif Khan, Research Assistant, OMICSRU

##### **Workshop/Seminar Topics Included:**

1. Evolution of the technique.
2. An overview about recombinant medicines, vaccines and gene therapy.

#### **Workshop/Seminar 6 -October 22, 2014**

##### **Next Generation Sequencing Data Analysis**

**Speaker:** Dr. Farhat Habib, PhD , Scientist D, IISER, India

##### **Workshop/Seminar Topics Included:**

1. Next generation sequencing platforms and data types
2. Principles behind data-analysis software for important applications, including quality checking, sequence alignment and variant calling.
3. Interpretation of whole genome, ChIP-Seq and RNA-Seq data

#### **Workshop/Seminar 7 -November 10, 2014**

##### **Automated Nucleic Acid Extraction System: QIAcube**

**Speaker:** Mr. Numeer Kadungothayil, OMICSRU

##### **Workshop/Seminar Topics Included:**

1. Principles of QIAcube
2. Applications: Isolation of DNA, RNA and Protein from various sources
3. Demonstration of the machine.

#### **Workshop/Seminar 8 -December 8, 2014**

##### **NGS data analysis**

**Speaker:** Mr. Mohd Wasif Khan, Research Assistant, OMICSRU

##### **Workshop/Seminar Topics Included:**

1. QC of NGS data obtained from Illumina Platform
2. Workflow of NGS data analysis

#### **Workshop/Seminar 9 - December 11, 2014**

##### **3130xl Genetic Analyzer/DNA Sequencer and its Applications**

**Speaker:** Dr. Ronald J. Bergkamp, PhD, Manager Technical Support EM, Life Sciences Solutions , The Netherlands

##### **Workshop/Seminar Topics Included:**

1. Principles of ABI 3130xl Genetic Analyzer
2. Applications:
  1. DNA sequencing and analysis
  2. Fragment analysis
  3. Mutation detection and profiling
  4. Genotyping
  5. Allele calling
  6. Fragment sizing
  7. SNP analysis



# What's new ?

## BIONUMERICS SOFTWARE FOR DATABASING AND ANALYSIS OF BIOLOGICAL DATA

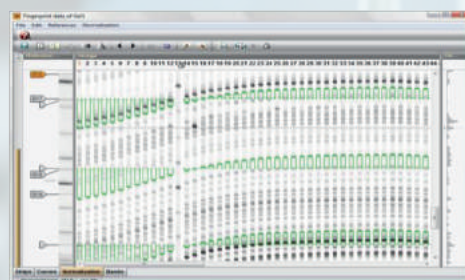
OMICS Research Unit has now acquired BioNumerics software, which is the most complete and powerful solution for databasing and comparative analysis of biological data.

The BioNumerics Application modules available in OMICSRU at present are:

1. **Fingerprint Data Module:** Normalization and Analysis of electrophoresis fingerprints from slab gels, automated sequencers and lab on a chip systems. Processing and Analysis of spectral data such as MALDI.
2. **Character Data:** Import and Analyze character data from a wide range of sources including phenotype panels, antibiotic resistance profiles, microarrays, etc.

The BioNumerics Analysis modules available in OMICSRU at present are:

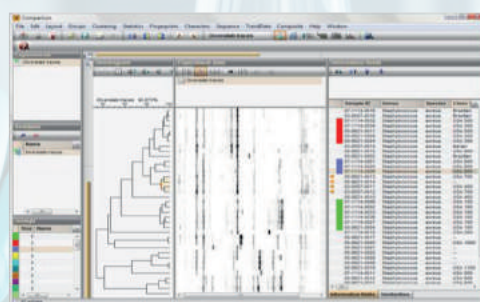
1. **Tree and Network Interference:** Select from a wide range of clustering algorithms to calculate evolutionary trees and relationship networks. Display confidence levels on clusters and branches.



Patient ID	NRT1				NRT2				PI			
	ZDV	DAT	DDI	FTC	ABC	TDF	EFV	NVP	DDV	SPV	IFV	FosPV
A1030412	1	1	1	1	1	1	1	1	1	1	1	1
A1030413	1	1	1	1	1	1	1	1	1	1	1	1
A1030414	1	1	1	1	1	1	1	1	1	1	1	1
A1030415	1	1	1	1	1	1	1	1	1	1	1	1
A1030420	1	1	1	1	1	1	1	1	1	1	1	1
A1030421	1	1	1	1	1	1	1	1	1	1	1	1
A1030422	1	1	1	1	1	1	1	1	1	1	1	1
A1030426	1	1	1	1	1	1	1	1	1	1	1	1
A1031140	1	1	1	1	1	1	1	1	1	1	1	1

SIR code: 0 = Susceptible, 1 = Intermediate, 2 = Resistant

Legend: 1. Susceptible, 2. Possible resistance, 3. Resistance





## “OMICSRU/RCF is ready for Mutation Analysis Requests”

To book the equipment, please visit <http://www.hsc.edu.kw/rcf/LimsAccess.aspx>



Upgraded version of ***Confocal microscope LSM 510 Meta***  
***allows for both live cell as well as fixed cell imaging***

1. Single Fluorescence
2. Multi Fluorescence
3. Spectral Imaging
4. Optical Sectioning and 3D Imaging
5. Time Lapse Experiment
6. FRET & FRAP Analyses

users are requested to book the equipment online

(<http://www.hsc.edu.kw/rcf> )