

RESUME

Personal Details

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<u>Nationality</u>	Jordanian
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Education

1985	Bachelor of Science Biology/Medical Technology Yarmouk University- Irbid, Jordan
1989	Masters of Science Biology/Parasitology Yarmouk University Irbid, Jordan Thesis title: Studies on the <i>in vitro</i> culturing of <i>Echinococcus granulosus</i> from sheep and donkey cysts in Jordan
2003	PhD in Biomedical Sciences Murdoch University South ST, Murdoch, WA, Australia Thesis Title: Studies on the <i>in vitro</i> Cultivation and development of <i>Cryptosporidium</i> Species

Employment

1991 – 1993	Investigative Researcher Co-investigator researching the ecology of hydatid disease in Jordan. This grant was supported by IDRC, Canada, Yarmouk University, Irbid, Jordan
1993 – 1999	Teacher and Research Assistant, (Full-time/permanent position), Department of Applied Biology, Jordan University of Science and Technology Irbid, Jordan
2000	Demonstrator in Veterinary Parasitology 344 for veterinary student at Murdoch University. South ST, Murdoch, WA
2001	Demonstrator in Veterinary Parasitology 344 and Parasitology 364 for Biomedical Technology students at Murdoch University. South ST, Murdoch, WA
2002	Post-doctoral fellowship (ADPI position) at Murdoch University. Murdoch, WA, Optimization of cell culture and molecular typing for the characterization of <i>Cryptosporidium</i> in water. Australian Research Council (ARC)-Linkage
2004-2005	Part-time Assistant Professor at the Hashemite University, Department of Medical Laboratory Sciences, Division of Allied Health Sciences, Zarqa, Jordan
2005-2012	Full time Assistant Professor at the Hashemite University, Faculty of Allied Health Sciences, Department of Medical Laboratory Sciences, Zarqa, Jordan
2012- -2016	Associate Professor at the Hashemite University, Faculty of Allied Health Sciences, Department of Medical Laboratory Sciences, Zarqa, Jordan
2012-2016	Head of the Department of Medical Laboratory Sciences
2013-2017	Dean for the Faculty of Allied Health Sciences
2018	Full Professor at Hashemite University, Faculty of Applied Health Sciences, Department of Medical Laboratory Sciences, Zarqa, Jordan

Teaching Courses (undergraduate and postgraduate):

Medical Parasitology	General Pathology	Advanced Research Project	Seminar
Advanced Parasitology	Histology and Micro - techniques	Special topics	Training 4th year students

Post-graduate activities**I. Supervising the following students:**

1	Supervising PhD student (Annika Esticourt) who graduated from Murdoch University, Western Australia. Thesis title: Characterization of <i>Cryptosporidium</i> growth and propagation in cell free environments, 2011
2	Supervising an American Fulbright student (Hiba Jamil) at Hashemite University, Zarka, Jordan Project title: Optimization of a Diagnostic Multiplex PCR Assay for Gastrointestinal Parasites, 2012
3	Supervising a master student (Rehab Kasharmeh), Department of medical laboratory Sciences, Hashemite University Thesis title: Studies on the salivary gland proteins of sand flies isolated from different parts of Jordan, 2013
4	Co-advisor for a master student (Nafn Amdar) at the department of Environmental Sciences and Management at Hashemite University Thesis title: Developing a National Management Plan for Controlling Leishmaniasis in Syria Using GIS and Remote Sensing, 2016
5	Supervising a master student (Abeer Hazaa), Department of medical laboratory Sciences, Hashemite University Thesis title: Differentiation between Multiple Sclerosis and brain Toxoplasmosis lesions among Jordanian patients using Magnetic Resonance Imaging (MRI) and hormonal analysis, 2016
6	Supervising a master student (Yasmeen Yasin), Department of medical laboratory Sciences, Hashemite University Thesis title: Comparison of microscopy, ELISA and nested PCR for detection of <i>Giardia</i> isolates from Jordan, 2016
7	Supervising a master student (Kamal Hijjawi), Department of medical laboratory Sciences, Hashemite University Thesis title: The Impact of Syrian Migration on The Prevalence of Cutaneous leishmaniasis in Jordan, 2016
8	Supervising a master student (Mahmoud Kazalea), Department of medical laboratory Sciences, Hashemite University Thesis title: Evaluation of protozoan parasites in children suffering from different types of cancer compared to normal children, 2017
9	Supervising a master student (Amani Allan), Department of medical laboratory Sciences, Hashemite University Thesis title: Incidence of <i>Toxoplasma gondii</i>: Immunological markers and risk factors in Jordanian women visiting gynecologist clinics, 2017

10	Supervising a master student (Nawal Alhaj), Department of medical laboratory Sciences, Hashemite University Thesis title: Differential diagnosis of multiple sclerosis using MRI imaging and selected clinical and biochemical tests, 2018
11	Supervising a master student (Nisreen Himsawi), Department of medical laboratory Sciences, Hashemite University Thesis title: Investigating the incidence rate of hydatid disease among residents in Al-Mafraq city using immunological and imaging techniques, 2018
12	Co-advisor for a master student (Juhina Thnaibat), department of Environmental Sciences and Management, Hashemite University Thesis title: Spatial and Temporal characteristics of cancer in Jordan, 2018

Committee member for the following master students

1.	Hamza Issa: Biological Department, Yarmouk University, Irbid-Jordan Thesis title: Characterization of <i>Echinococcus granulosus</i> Strains Using Polymerase Chain Reaction (PCR) and Monoclonal Antibodies against the Second Subunit of Antigen B (EgAgB8/2).
2.	Israa Jaradat: Biological Department, Jordan University of Science and Technology Thesis title: Measurement of bacterial endotoxin utilizing the Limulus Amebocyte Lysate (LAL) Assay and Mass spectrometry (GC_MS) comparative study and forensic applications.
3.	Abd Almajeed Mahmoud Alajlouni. Veterinary Medicine, Jordan University of Science and Technology. Thesis title: Isolation and Identification of <i>Culicoides</i> species and <i>Culicoides imicola</i> from Epizootic Hemorrhagic Disease
4.	Asma Mustafa Ibrahim Abdan. Department of Medical Laboratory Sciences, Hashemite University Thesis title: Evaluation of the toxic effects of the <i>Nicotiana glauca</i> on the immune, hematopoietic, hepatic and nephritic system in <i>Balb/c</i> mice
5.	Jumana Fatthi Abdulqader Abu-kwaik. Department of Medical Laboratory Sciences, Hashemite University. Thesis title: Evaluation of potential immunomodulation of the Angiotensin Covering Enzyme Inhibitor (Enalapril) on <i>Balb/c</i> mice
6.	Rola Ali Mohammad Ghanem. Department of Medical Laboratory Sciences, Jordan University of Science and Technology. Thesis title: <i>Blastocystis</i> and <i>Cryptosporidium</i> species associated with irritable bowel syndrome and inflammatory bowel disease
7.	Mona Ibrahim Darwish. Department of Medical Laboratory Sciences, Hashemite University Thesis title: Development and changes in the quantities of the IgG and IgM classes in Human Breast-milk: Jordanian Cohort Study
8.	Nada Nawaf Mohmoud Issa, Department of Medical Laboratory Sciences, Hashemite University Thesis title: The association of breastfeeding duration with DNA methylation (Epigenetics) of the genes that involved in human immunity of the (Toll-like receptor-1 (TLR1)) gene in adolescents

Professional Activities

1987	Attended the Second Pan Arab Seminar on leishmaniasis and other Zoonosis, King Hussein Medical Centre, Amman, Jordan
1989	Attended the Third Pan Arab Seminar on leishmaniasis and other Zoonosis King Hussein Medical Centre, Amman, Jordan

1989	Attended a training course on the production of Monoclonal Antibodies and their application in Parasitic Infections, Yarmouk University, Irbid, Jordan
1989	Attended a training course for 14 days on the serodiagnosis of human hydatidosis using Immunoblotting Institute of Infections and Tropical Medicine
1993	Attended the Fourth International and Pan Arab Seminar on leishmaniasis and other Zoonosis, King Hussein Medical Centre, Amman, Jordan
1995	Attended a training course in Echinococcosis, and participated in the Scientific Programme XVII International Congress of Hydatidosis, Limassol, Cyprus
2000	Oral presentation at the joint ASP (Australian Society for Parasitology)/ NZSP (New-Zealand Society for Parasitology) conference in Wellington, New-Zealand 23- 28 of September.
2000	Attended an introductory course in molecular biology at Western Australian State Agricultural Biotechnology Centre, February 6 th – 9 th Murdoch University, Perth, WA.
2001	Oral presentation at Inaugural Medical Research Symposium in 9 th of June, Fremantle Hall. Perth, WA.
2002	Oral presentation at an International Conference for coccidiosis in July 9-14, Cairns, Queensland
2003	Oral presentation of the results obtained in the first and second year of PhD at conference on <i>Cryptosporidium</i> from molecules to disease in, 8- 11 of August, Fremantle, WA.
2003	Oral presentation at the AMSR Medical Research Week 5-2 th of June, Perth FJ Clarke Lecture Theatre Complex QEII, Medical Centre, Perth, WA.
2004	Oral presentation of a paper at the International <i>Giardia</i> and <i>Cryptosporidim</i> conference 20-24 September, Amsterdam, Netherland.
2005	Continue work on the post-doctoral fellowship (ADPI Position) at Murdoch University (Optimization of cell culture and molecular typing for the characterization of <i>Cryptosporidium</i> in water Australian Research Council (ARC)-Linkage) from the period of 20 th of June till 10 th of September 2005. Consultant for Cryptogene working at Murdoch University for 6 weeks in an attempt to optimize the cell free culture and optimize a simplified viability assay for the detection of <i>Cryptosporidium</i> in water and environmental samples. 26 June till 5 th of August.
2006	Attended a Medical professional day at Alhashymia village 8 th of April.
2007	Oral presentation of at the II International <i>Giardia</i> and <i>Cryptosporidim</i> conference. October, Morelia, Mexcio
2007	Attended the AACR International Conference: Advances in Cancer Research from the Laboratory to the Clinic which was held, 16 -19 March, Dead Sea, Jordan.

2008	Oral Presentation at the 2 nd International Jordanian-Egyptian Biotechnology Conference, 11-13 November, Yarmouk University, Irbid- Jordan.
2008	Oral Presentation at the <i>Leishmania</i> Collaborative Research Opportunities in North Africa and the Middle East. Sponsored by NIAID/ NIH, 22-25 of June, Tunis.
2009	Oral presentation of at the III International <i>Giardia</i> and <i>Cryptosporidim</i> conference 11-15 October, Orvieto, Italy
2009	Participating in the workshop: Responsible Science for a safe and secure society which was organized by the American Association for the advancement of Science in partnership with the H. R. H. Princess Haya biotechnology Center of the Jordan University of Science and Technology, 3-6 October, Amman, Jordan
2010	Organized a Scientific Medical Day in the Faculty of Allied Health Science 6 th of April, which was opened by the Vice President Prof. Kamal Bani Hani, Medicine Theater, Faculty of Medicine, Hashemite University, Zarka, Jordan
2011	Participating in the workshop: Responsible Science for a safe and secure society which was organized by the American Association for the advancement of Science in partnership with the Kuwait Institute for Scientific Research (KISR), 13-17 March, Kuwait
2011	Attended the International conference on the Biosafety and Biosecurity (BBIC) which was held in El-Hassan Science City, 13-15 September, Amman, Jordan
2011	Oral presentation at the 6 th International Conference of the Royal Medical Services, 19-22 November, Dead Sea, Jordan
2015	Attended the annual Vector Net meeting in Parma /Italy, from 27 th to 29 th of January 2015, Italy
2015	Attended a meeting organized by the Walter Reed army Institute of Research (WRAIR) in Ankara /Turkey from 26 th -29 th of March 2015
2017	Oral Presentation in the 6 th International Giardia and Cryptosporidium Conference 26-28/April/2017 in Havana City in Cuba
2017	Oral presentation in the International Conference on Building Human and Animal Health Capacities, October 17-19, Jordan University of Science and Technology, Irbid – Jordan
2018	Attended a training workshop on the Biosafety and Biosecurity (BBIC) which was held in Amman Intercontinental, 12-16 August, Amman, Jordan
2019	Attended a workshop entitled: Jordans Research Priorities and Quality Agenda which was held in Jordan University in Amman and Organized by Clarivate Analytics and the Scientific Research Support Fund on the 18 th of September, 2019
2020	Oral presentation at the faculty of Medicine seminar series, 19-22 November, Hashemite University, Zarga, Jordan

Publications

1.	Hijjawi, N. , Abdel-Hafez, S. and Kamhawi, S. A. 1992. <i>Echinococcus granulosus</i> : Possible formation of a shelled egg <i>in vitro</i> . International Journal of Parasitology, 22:117 – 118
2.	Hijjawi, N. , Abdel-Hafez, S. K. and Al-Yaman, F. M.1992. In vitro culture of strobilar stage of <i>Echinococcus granulosus</i> of sheep and donkey origins of Jordan. Parasitology Research,78:607-616
3.	Kamhawi, S. A, Hijjawi, N. , Shatnawi, N. and Abdel-Hafez, S. K. 1994. Multiple cystic echinococcosis in a Jordanian patient: Case Report and <i>In Vitro</i> culturing. Japanese Journal of Parasitology, 43: 489-492.
4.	Kamhawi, S, Hijjawi N, A Abu-Gazaleh, M Abbass. 1995. Prevalence of hydatid cysts in livestock from five regions of Jordan. Annals of Tropical Medicine and Parasitology 01/1996; 89(6):621-9.
5.	Hijjawi, N.S. , B. Meloni, Morgan, U, and Thompson, R.C.A. 2001. Complete Development and long-term maintenance of <i>Cryptosporidium parvum</i> human & Cattle genotypes in cell culture. International Journal of Parasitology, 31: 1048-1055.
6.	Morgan-Ryan, U., Fall, A., Ward, L.A., Hijjawi, N. , Suliman, I., Fayer, R., Thompson, R.C.A., Olson, M., Lal, A. and Xiao, L. 2002. <i>Cryptosporidium hominis</i> n. sp. (Apicomplexa: Cryptosporidiidae) from humans, <i>Homo sapiens</i> . Journal of Eukaryotic Microbiology. 49(6):433-40.
7.	Hijjawi, N.S. , Meloni, B.P, U. Ryan, and Thompson, R.C.A. 2003. Successful <i>in vitro</i> cultivation of <i>Cryptosporidium andersoni</i> : evidence for the existence of novel extracellular stages in the life cycle and implications for the classification of <i>Cryptosporidium</i> . International Journal for Parasitology, 32: 1719-1726.
8.	Hijjawi, N.S. 2003. <i>In vitro</i> cultivation and Development of <i>Cryptosporidium</i> in Cell Culture. In <i>Cryptosporidium from molecules to disease</i> , R. C. A Thompson, A. Armson, and U. M. Morgan-Ryan (Eds.). Elsevier, Amsterdam, the Netherlands, <u>Book Chapter</u> 31:233-253
9.	Hijjawi, N.S. Meloni, B.P. Ng'anzo, M. Ryan, U.M. Olson, M. E., and Thompson, R.C.A. 2004. Complete development of <i>Cryptosporidium parvum</i> in host cell free culture. International Journal for Parasitology 34, 2004: 769-777.
10.	Thompson, R.C.A, Olson, M. E., Zhu, G., Enomoto, S., Abrahamsen, M. S and Hijjawi, N. S. 2005. Cryptosporidium and Cryptosporidiosis. Advances in Parasitology, 59: 77-158.
11.	Hijjawi, N.S. A.C. Boxell and Thompson, R.C.A. 2009. Recent advances in the development of <i>Cryptosporidium</i> parasite. <u>Book chapter</u> . In <i>Giardia and Cryptosporidium from Molecules to disease</i> . Guadalupe Ortega-Pierrs, Simon Caccio, Ronald Fayer, Theo G. Mank, Huw v. Smith, R. C. Andrew Thompson. CABI International, ISBN 978-1-84593-391-3
12.	Hijjawi, N. S. A. C. Boxell, and U. M Ryan. 2008. Comparison of various staining methods for the detection of <i>Cryptosporidium</i> in cell-free culture. Experimental Parasitology,120:67-72.
13.	Al Hourani, H., Atoum, M., Akel, S., Hijjawi, N. and S. Awawdeh. 2009. Effects of Ramadan fasting on some haematological and biochemical parameters. Jordan Journal of Biological Sciences. ISSN 1995-6673: 103-108.
14.	Al Hourani, H., Atoum, M., Alboqai, O, Cheikh Ismail, L., Aldhaheri, A and Hijjawi, N. Effectiveness of dietary intervention for obese women in Jordan. 2009. International Journal of Food Science and Nutrition. ISSN: 0963-7486: 1-7.
15.	Hijjawi, N. S. Estcourt, A., Yang, R., Monis, P., and U. M Ryan. 2010. Complete development and multiplication of <i>Cryptosporidium hominis</i> in cell-free culture. Veterinary Parasitology, 169: 29-36.

16.	Hijjawi, N. S. <i>Cryptosporidium</i> Special Issues 2010. New developments in cell culture. <i>Experimental Parasitology</i> , 124: 54-60.
17.	Hijjawi, N. S. Josephine, N. g, Rongchang Yang, Atoum, M.F.M and Una Ryan. 2010. Molecular characterization of <i>Cryptosporidium</i> isolates from Jordan and identification of rare GP60 subtypes. <i>Experimental Parasitology</i> , 125: 161-164.
18.	Josephine, N. g, Yang, R., McCarthy, S., Cameron, G., Hijjawi, N. , Miller, R., and U. M Ryan. 2011. Molecular characterization of <i>Cryptosporidium</i> and <i>Giardia</i> in pre-weaned calves in Western Australia and New South Wales. <i>Veterinary Parasitology</i> , 176: 145-150.
19.	Yanagida, T, Mohammadzadeh, T, Kamhawi, S, Nakao, M, Sadjjadi, SM, Hijjawi, N. , Abdel-Hafez, SK, Sako Y, Okamoto, M, Ito, A. 2012. Genetic polymorphisms of <i>Echinococcus granulosus sensu stricto</i> in the Middle East. <i>Parasitology International</i> , Dec; 61(4):599-603. doi: 10.1016/j.parint.2012.05.014. Epub 2012 Jun 2.
20.	Salahuddin M Jaber, Jwan H Ibbini, Nawal S Hijjawi , Nafn M Amdar, Mohammed J Huwail, Khalid Al-Aboud. 2013. Exploring recent spatial patterns of cutaneous leishmaniasis and their associations with climate in some countries of the Middle East using geographical information systems. <i>Geospatial health</i> , 8(1):143-158.
21.	Rongchang Yang, Cain Murphy, Yong Song, Josephine Ng-Hublin, Annika Escourt, Nawal Hijjawi , Rachael Chalmers, Stephen Hadfield, Andrew Bath, Cameron Gordon and Una Ryan. 2013. Specific and quantitative detection and identification of <i>Cryptosporidium hominis</i> and <i>C. parvum</i> clinical and environmental samples. <i>Experimental Parasitology</i> , 135: 142-147.
22.	Salahuddin, M, Jwan, Ibbini, Nawal. S. Hijjawi and Nafan Amdar. 2014. Applied spatial analysis and Policy. An exploratory comparative study of recent spatial and temporal characteristics of cutaneous leishmaniasis in the Hashemite Kingdom and Syrian Arab Republic pre-Arab spring and their health policy implications. ISSN 1874-463X <i>Appl.Spatial Analysis</i> . DOI 10.1007/s 12061-014-9113-3.
23.	Una Ryan and Nawal Hijjawi . 2015. New developments in <i>Cryptosporidium</i> research. <i>International Journal for Parasitology</i> . 45: 367-373.
24.	Yang, R., Elankumaran, Y., Hijjawi, N. and Ryan, U. 2015. Validation of cell-free culture using scanning electron microscopy (SEM) and gene expression studies. <i>Experimental Parasitology</i> . 153: 55-62
25.	Nawal Hijjawi & Rongchang Yang & Rami Mukbel, Yasmeeen Yassin, Taghrid Mharib & Una Ryan. 2016. First genetic characterisation of <i>Giardia</i> in human isolates from Jordan. <i>Parasitology Research</i> , pp 1-7.
26.	Mukbel RM, Khasharmeh RH, Hijjawi NS , Khalifeh MS, Hatmal MM, McDowell MA. 2016. Human immune response to salivary proteins of wild-caught <i>Phlebotomus papatasi</i> . <i>Parasitology Research</i>
27.	Nawal Hijjawi , Kalil A. Kanani, Malak Rasheed, Manar Atoum, Mona Abdel-Dayem, and Mohammad R. Irhimeh. 2016. Molecular Diagnosis and Identification of <i>Leishmania</i> Species in Jordan from Saved Dry Samples. <i>BioMed Research International</i> . 7 pages
28.	Nawal Hijjawi , Rami Mukbel, Rongchang Yang, and Una Ryan. 2016. Genetic characterization of <i>Cryptosporidium</i> in animal and human isolates from Jordan. <i>Veterinary Parasitology</i> . 228: 116-120.
29.	Una Ryan, Nawal Hijjawi , Andrea Papparini and Paul Monis. Its official <i>Cryptosporidium</i> is a gregarine: what are the implications for the water industry? <i>Water Research</i> . 2016. 105:305-313.
30.	Ali-Al-Radideh, ReemaTayyem, Kholoud Al-Fayomi, Nisreen Nimer, Amer Malkawi, Rana Al-Zu'bi, Lana Agrib, Imad Athamneh. Nawal Hijjawi . 2016. Assessment of abdominal fat using high-field magnetic resonance imaging, Anthropometric and Biochemical Parameters. <i>The American Journal of the Medical Sciences</i> . 352 (6): 593- 602.

31.	M. S Hbahbih MS, I Athamneh, HA Alabadi, AA Hazzaa, NS Hijjawi , AM Al-Radaideh. 2016. High resolution, quantitative magnetic susceptibility and phase mapping MRI techniques show increased iron deposition in patients with multiple sclerosis. <i>Multiple sclerosis Journal</i> . 22: 220-221. SAGE Publications LTD.
32.	Al-Radaideh Ali M, Hijjawi Nawal S , Abdelfattah Ali M, Al-Khreisat Mutaz J, Bani-Hani Kamal E.A. 2017. 10-year retrospective study on hydatid disease in Jordan with emphasis on the role of imaging in its diagnosis. <i>International Journal of Medical Research and Health Sciences</i> . 6 (1):32-41.
33.	AbdelRahaman Zueter, Nawal Hijjawi , Mu'ad AlZu'abe, Amani Zaiter and Zeehaida Mohamed. 2017. Strongyloidiasis Worldwide: Review and Literature Updates in <i>Parasitology Book</i> . Avid Science.
34.	Nawal Hijjawi , Alireza Zahedi, Mahmoud Kazaleh and Una Ryan. 2017. Prevalence of <i>Cryptosporidium</i> species and subtypes in paediatric oncology and non-oncology patients with diarrhea in Jordan. <i>Infection, Genetics and Evolution</i> . 55: 127-130.
35.	Nawal S. Hijjawi , Ali M. Al-Radaideh, Kholoud I. Al-Fayomi, Nisreen A. Nimer, Amer A. Malkawi, Rana M. Al-Zu'bi, Lana M. Agraib, Reema F. Tayyem. 2017. Relationship between Serum Leptin with some Biochemical, Anthropometric and Abdominal Fat Parameters. <i>Diabetes & Metabolic Syndrome: Clinical Research & Reviews</i> 12 (3), 207-213
36.	Reema F Tayyem, Nawal S Hijjawi , Hiba A Bawadi, Nisreen A Nimer, Lana M Agraib, Sabika S Allehdan, Shatha Hammad & Ali M Al-Radaideh. 2018. Exploration of micro- and macronutrient consumption and leverage of interaction with adipokines among Jordanian adults. <i>Clinical Practice</i> . 15(1): 410-423410
37.	Association between intakes of macro- and micro-nutrients and Serum Lipid profiles among Jordanian adults: a preliminary study. 2018. Reema F Tayyem, Nawal S Hijjawi , Narmeen al-awaad, Nisreen A Nimer, Lana M Agraib, Sabika S Allehdan and Ali M Al-Radaideh. <i>Progress in Nutrition</i> . 20 (3), 361-371
38.	Una Ryan, Nawal Hijjawi and Lihua Xiao. Foodborne cryptosporidiosis. 2018. <i>International Journal of Parasitology</i> . 48: 1-12.
39.	Nawal S. Hijjawi , Ali M. Al-Radaideh, Eman M. Rababah, Khaled M. Al-Qaoud, Kamal E. Bani-Hani. Cystic echinococcosis in Jordan: A review of causative species, previous studies, serological and radiological diagnosis. 2018. <i>Acta Tropica</i> . 179: 10-16.
40.	Hamzah S. Issa, Sami K. Abdel-Hafez, Nawal S. Hijjawi and Khaled M. Al-Qaoud. 2018. Molecular Characterization of <i>Echinococcus granulosus</i> sensu stricto Cysts from Domestic Ruminants in Jordan. <i>Jordan journal of Biological Sciences</i> . 11 (3): 301-306.
41.	Nawal Hijjawi , Rongchang Yang, Ma'mon Hatmal Yasmeeen Yassin, Taghrid Mharib, Rami Mukbel, Sameer Alhaj Mahmoud, Abdel-Ellah Al-Shudifat and Una Ryan. 2018. Comparison of ELISA, nested PCR and qPCR for detection of <i>Giardia</i> isolates from Jordan. <i>Experimental Parasitology</i> . 185: 23-28.
42.	Nawal.S. Hijjawi , Moutaz, J. Al-Khreisat, Omar Abuyaman, Ali M. Abdelfattah, AbdelRahman Zueter, Eman M. Rababah, Mohammad A. Altamimi and Mahmoud. E. Al-Hiari. 2018. Seroprevalence of <i>Toxoplasma gondii</i> in cancer patients admitted to hospitals of the Royal Medical Services in Jordan. <i>Jordan Journal of Biological Sciences</i> . 11(5): 537-540
43.	Mohammad Al-Tamimi, Nisreen Himsawi, Jumana Abu-Raideh, Deaa Abu jazar, Hussam Aljawalkeh, Sameer Al Haj Mahmoud, Nawal Hijjawi , Hasan Hawamdeh. 2018. Nasal colonization by methicillin-sensitive and methicillin-resistant <i>Staphylococcus aureus</i> among medical students. <i>Journal of Infectious Diseases in developing Countries</i> . 12(5):326-335.

44.	Salahuddin M. Jaber, Jwan H. Ibbini, Nawal S. Hijjawi and Juhina J. Thnaibat. Spatial and Temporal Characteristics of Cancer in the Period from 2004 to 2013 in the Hashemite Kingdom of Jordan. 2018. Geospatial Health. 13 (2):265-275. DOI: 10.4081/gh.2018.695
45.	Una Ryan, Nawal Hijjawi and Lihua Xiao. 2018. Cryptosporidium. Book Chapter in Handbook of foodborne diseases. Dongyou Liu. CRC Press. ISBN 9781315230917- CAT# KE40454
46.	Una Ryan, Nawal Hijjawi , Yaoyu Feng and Lihua Xiao. 2019. Giardia: an under-reported foodborne parasite. International Journal for Parasitology.49: 1-11
47.	Ali-Al-Radideh, ReemaTayyem, Kholoud Al-Fayomi, Nisreen Nimer, Amer Malkawi, Rana Al-Zu'bi, Lana Agrib, Imad Athamneh. Nawal Hijjawi . The Association Of Hepatic Fat Percentage With Selected Anthropometric And Biochemical Parameters At 3 Tesla Magnetic Resonance Imaging. 2019. British journal of biomedical science. 76:2, 70-76, DOI: 10.1080/09674845.2019.1571555
48.	Kamal Hijjawi, Nawal Hijjawi and Jwan Ibbini. Detection, genotyping and phylogenetic analysis of Leishmania isolates collected from infected Jordanian residents and Syrian refugees who suffered from cutaneous leishmaniasis. 2019. Parasitology Research.
49.	Reema F Tayyem, Ali M Al-Radaideh, Shatha Hammad, Narmeen al-awaad, Nisreen A Nimer, Lana M Agraib, Sabika S Allehdan and Nawal S Hijjawi . Subcutaneous and Visceral Fat Volumes Measured by MRI and its Relationship with Nutrients Intake among Adults. 2019. Asia Pacific Journal of Clinical Nutrition. 28 (2).
50.	Nisreen Himsawi, Nawal Hijjawi , Ali Al-Radaideh, and Mohammad Al-Tamimi: Seroprevalence of cystic echinococcosis in a high-risk area (Al-Mafraq Governorate) in Jordan, using indirect hemagglutination test. Parasite Epidemiology and Control. e00104. doi: 10.1016/j.parepi.2019.e00104
51.	Ma'mon M. Hatmal, Nada N. Issa , Walhan Alshaer, Hamzeh J. Al-Ameer , Omar Abuyaman , Reema Tayyem and Nawal S. Hijjawi . 2019. Association of Breastfeeding Duration with Susceptibility to Allergy, Influenza, and Methylation Status of TLR1 Gene. Medicina. 55, 535; doi:10.3390/medicina55090535
52.	AbdelRahman M. Zueter, Nawal S. Hijjawi , Khaled N. Hamadeneh, Maysa M. Al-Sheyab and Amal M. Hatamleh. 2019. Cryptosporidiosis among Hemodialysis Patients in Jordan: First Preliminary Screening Surveillance. 2019. Tropical Medicine and Infectious Disease. 4, 131; doi:10.3390/tropicalmed4040131
53.	Ali Al-Radaideh; Nawal El-Haj; Nawal Hijjawi . Iron deposition and atrophy in cerebral grey matter and their possible association with serum iron in relapsing-remitting (RRMS) multiple sclerosis. 2021. Clinical Imaging. 69: 238-242. DOI: 10.1016/j.clinimag.2020.09.006

Activities and Involvements in Research grant:

1.	Principle Investigator for a grant entitled: Prevalence and Pathogenesis of <i>Cryptosporidium</i> in Children and Pregnant Women in the Northern of Jordan sponsored by Hashemite University. Total Fund: JD 3,000
2.	Principle Investigator for a grant entitled: Application of molecular genotyping for the characterization and intervention of leishmaniasis in Jordan sponsored by Hashemite University: Total Fund: 13,500 JD
3.	Co-investigator on a grant funded by the Ministry of Higher education and Scientific Research, entitled: Profiling and Assessment of Chlorinated Hydrocarbons and Infectious Agents in Waters Supplying Zai Water Treatment Plant. Scientific Research Fund. Jordan: JD 115,000
4.	Consultant on the <i>Cryptosporidium</i> Diagnostic Investment Proposals funded by the MWEP (Murdoch-westcheme), Perth, Australia. AUD 600,000
5.	Principle Investigator for a grant entitled: Detection and differentiation of <i>Entamoeba species</i> in stool specimens obtained from patients suffering from gastroenteritis using (Nested-PCR) assay. 18,400 JD

6.	Co-investigator on a grant funded by the Walter Reed army Institute for Research (WRAIR) / USA entitled: Identification and incrimination of mosquito and sand fly vectors of viral diseases and pathogens present in refugee zones of the Turkish and Jordanian borders with Syria. USD 226,000
7.	Co-investigator on a grant sponsored by the Scientific Research Support Fund / Ministry of Higher Education / Jordan entitled: Detection and subtyping of <i>Cryptosporidium</i> from human, animals and environmental samples in an attempt to understand the transmission dynamics of cryptosporidiosis in Jordan. JD 66800
8.	Principle Investigator for a grant entitled: The prevalence of <i>Toxoplasma gondii</i> in cancer patients admitted to Hospitals of the Royal Medical Services. Sponsored by Hashemite University. JD 3900

Registered Patents:

RC Thompson, **Nawal Hijjawi**, Manual Campos, Amber Appelbee, Merle Olson. Propagation of cryptosporidium in cell culture. **2003/12/25** US: Application number: 10177251. **Description.** The invention provides an improved method of propagating *Cryptosporidium* in cell culture. The methods supports the complete life cycle or *Cryptosporidium* and produces all known forms of the parasite in addition to two novel forms. *Cryptosporidium* parasites propagated in vitro can be used to produce a vaccine composition for immunizing animals against *Cryptosporidium* infection.

Nawal Hijjawi, Andrew RC Thompson, Una M Ryan. Culture Methods for *Cryptosporidium*. 2008/2/14.US Application number 10590817. **Description.** A host-cell free method for culturing *Cryptosporidium* comprising the step of introducing *Cryptosporidium*, at a first lifecycle stage, into a host-cell free medium under conditions which enable the *Cryptosporidium* to progress to a second lifecycle stage

Main research Interest:

1.	<u>Molecular Epidemiology of Protozoan Parasites:</u> Most of my recent research moved toward applying the new molecular tools for the identification and characterization of species and subtypes of different parasites such as <i>Cryptosporidium</i> , <i>Giardia</i> and <i>Leishmania</i> . Such studies are very important to confirm the presence of the above parasites in clinical and environmental samples and also help to track the route / source of infection especially during outbreaks. Moreover the characterization of the species and subtypes of different parasites within communities will help to understand the transmission dynamics of different parasites in human population and also to track the source of the disease if it originate from animal to human (zoonotic transmission) or from human to human (anthroponootic transmission). Also the genotyping and the application of molecular characterization studies on water, food and environmental samples will assist also on the implementation of control programs in a specific geographic area
2.	<u>Optimizing Culture Systems for the Continues Maintenance of different Parasites in the lab:</u> I have a registered a patent in USA for modifying a culture system for <i>Cryptosporidium</i> . The optimization of a successful in vitro culture model for <i>Cryptosporidium</i> is still an ongoing research in collaboration with experts in the field at Murdoch University, Western Australia. The optimization of a successful culture system for <i>Cryptosporidium</i> will advance research studies in many fields such as drug screening, vaccine development, for the development and testing of different diagnostic kits etc.
3.	<u>Diagnosis of Different Parasitic Diseases:</u> The diagnosis of many parasites such as <i>Cryptosporidium</i> , <i>Giardia</i> , <i>Leishmania</i> , <i>Entamoeba</i> , <i>Toxoplasma</i> and <i>Echinococcus granulosus</i> in Jordan is poor and relies mostly on the demonstration of different parasite stages using microscopy which is labor extensive, time consuming and require a skilled personnel to identify different parasite stages however, during my research we start to apply advanced sensitive immunological and DNA based assays for the sensitive diagnosis of many parasites of clinical importance especially in children and immune-compromised patients.

Other Activities:

1. Section Editor for the Parasitology Research Journal (Editor for two sections: Immunology and Host-Parasite Interactions; Protozoology (Medical and Veterinary) ISSN: 0932-0113 (Print) 1432-1955 (Online) by Springer. Impact factor: 2.558. <https://link.springer.com/journal/436>

2. Reviewer for many Journals among them Vaccine (impact factor: 3.3), Acta Tropica (impact factor: 2.5), PLOS One (impact factor: 2.7), Parasitology (impact factor: 3.7), Jordan Journal of Biological Sciences (Scopus).
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3. Citations on google scholar 2348

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