**Prof. Micha Ron 2023**

**CURRICULUM VITAE**

1. Personal Details:

1953 Born in Haifa, Israel. ID: 051515286, Israeli. 3 Itamar Ben-Avi St.,

Nes-Ziona 74051. Tel: 08-9484428 Fax: 08-9470587 micha.ron@mail.huji.ac.il

2. Higher education:

1975-78 B. Sc.Agr. in Animal Science at the Hebrew University, Jerusalem, Faculty of Agriculture, Rehovot, Israel

1978-80 M.Sc. in Genetics and Breeding at Hebrew University, Jerusalem, Faculty of Agriculture, Rehovot, Israel. Title of thesis: Interaction between genotype and environment in Israeli dairy cattle. Supervisor: Y. Hillel, #3

1980-86 Ph.D. in Genetics and Breeding at the Hebrew University, Jerusalem, Faculty of Agriculture, Rehovot, Israel. Title of thesis: Genetic and physiological associations between milk production and fertility traits in rats and dairy cattle. Supervisors: M. Soller and A. Cahaner, # 4, 5

1987-88 Post-doctoral fellowship at Hebrew University, Jerusalem, Dept. of Genetics. Host: Prof. Rita, #17

1988-89 Post-doctoral fellowship at University of California, Irvine, Dept. of Microbiology and Molecular Genetics. Host: Prof. Gutman, # 22, 33

3. Appointments at the Hebrew University:

1978-83 Teaching Assistant, Dept. of Genetics, Faculty of Agriculture, Rehovot

1992 External teacher, Faculty of Agriculture, Rehovot.

Course on: "Principles in Animal Breeding"

2006-2021 External teacher, Faculty of Agriculture, Rehovot.

Course on: "Genetic variation and its applications"

<http://www3.huji.ac.il/htbin/course/shnaton10/2009/73527>

4. Additional Functions/Tasks at the Hebrew University:

1987- 2021 Guest lecturer at the Faculty of Agriculture, Rehovot.

Course on: "Principles in Animal Breeding”

1990-93 Guest lecturer at the Faculty of Agriculture, Rehovot.

Course on: "Advanced issues in Animal Breeding”

2005 Guest lecturer at the Faculty of Agriculture, Rehovot.

International course on Ruminants.

2014-16 Guest lecturer at the Faculty of Agriculture, Rehovot.

Course for herd managers of dairy cows.

5. Service in other Academic and Research Institutions:

1989 – 2021 Research Scientist at the ARO, The Volcani Center, Institute of Animal Science. Promoted to Rank B in 1990; Rank A in 1995 and

Rank A+ on 2001 (highest rank in Government research service).

1989-95 Head, Animal Genetics Unit.

1998 to 01 Vice Head, Institute of Animal Science, The Volcani Center

1998 to 01 Head, Department of Quantitative and Molecular Genetics of Ruminnants

2001-02 Sabbatical leave at University of California, Davis, Dept. of Animal Science. Host: Prof. Medrano, # 77

2002-03 Sabbatical leave at University of Illinois, Champaign, Urbana, Keck Center for Comparative and Functional Genomics. Host: Prof. Lewin, # 61, 66, 67, 72, 78

2009 Rank professor at the Hebrew University of Jerusalem.

6. Other activity:

1986-2021 Member of Israeli dairy cattle herd book committee

1986-2021 Member of Israeli dairy cattle breeding committee

1988 BARD fellowship grant. Title: Mitochondrial Genetics. Postdoctoral Fellowship at the Department of Microbiology and Molecular Genetics, University of California, Irvine, USA, for

One year ($29,000).

1989-2021 National coordinator of commission on Animal Genetics, European Association for Animal Production (EAAP)

Member of the International Society of Animal Genetics

Member of the Society of Genetics in Israel

1990-92 Member of the evaluation committee of BARD for research programs in Animal Science

1990-92 Member of the animal science research proposal evaluation committee.

1991-2021 Reviewing of manuscripts for 16 scientific journals:

Irish J. of Agricultural and Food Research, Austral. J. of Agricultural

Research, J. of Genetics, Selection and Evolution, J. of Anim. Genet.,

BMC Veterinary Research, BMC Genetics, BMC Genomics,

Theriogenology, J. of Animal Breeding and Genetics, Animal

Biotechnology, J. of Livestock Production Science, J. of Dairy

Research, Heredity, Animal, Physiological Genomics, J. of Animal

Science.

1991-2021 Reviewing of proposals for the following funding agencies:

BARD, Israel Science, German Israeli Foundation (GIF), Chief scientist of the ministry of Agriculture, Science Foundation Ireland (SFI).

1992-94 Member of the cattle branch proposal evaluation committee.

1993-95 Head of purchasing equipment committee of the Institute of animal science

1994 Member of the ARO genetic markers committee.

1998 Member of the Israel Science Foundation - zoology committee.

2000-01 Member of the ARO genomics committee.

2000-01 Member of the ARO planning committee for the biotechnology center.

2004 Best poster in the International Society of Animal Genetics meeting.

F015 (Tokyo, Japan).

2005-2012 Member of the navigating team of the dairy cattle fund for research

2007-2021 Member of the Professional committee, ARO.

2008 Best poster in the Israeli Bioinformatics annual symposium IBS08

#123 (Tel-Aviv, Israel).

2012 Member of the evaluation committee of BARD for research programs in Animal Science.

2014-2021 Member of the Academic committee, ARO.

2015 Head of committee for selection of the best young researcher in the Institute of Animal Sciences and prize donation.

2015 Co-Organizer of New frontiers and innovation workshop No. 2 on: "Use of genomics to expedite plant and animal breeding", Bet-Dagan, Volcani Center.

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7. Research Grants (Total of my share > $ 3,000,000):

1989-92 BARD US-1519-88: Mitochondrial molecular genetics and milk production in dairy cows, Beitz D. and A.E. Freeman.

$ 90,000/180,000. # 17,22

1992-95 BARD IS-1939-91R: Detection and mapping of genes affecting traits of economic importance in dairy cattle with the aid of molecular genetic markers. $ 126,000/252,000. # 21,23,24,30

1994-97 Chief Scientist of the Ministry of Agriculture 364-0146-94: Development of high genetic and technological potential cattle embryos for breeding and export. $ 90,000/90,000. # 33,34

1994 Chief Scientist of the Ministry of Agriculture 364-0150-94: Incorporation of direct selection on milk protein loci into a national dairy breeding program, Weller J.I. $ 30,000/30,000, # 23

1995-98 BARD IS-2383-94C: A systematic genome search for genes affecting economic traits in dairy cattle with the aid of genetic markers, Weller J.I, Lewin H.A. $ 165,000/300,000, # 30,32,42-44

1997-00 Chief Scientist of the Ministry of Agriculture 364-0155-97: Development of high genetic and technological potential cattle embryos for breeding and export, Weller J.I. $ 48,000/48,000. # 42,44

1997 Israel Milk Marketing board grant 364-0163-97: Development of

a molecular generic infrastructure for using DNA markers in the development of improved breeding material. $ 70,000/70,000. # 44

1998-01 The Israel Science Foundation 123/97: Mapping a major gene affecting umbilical hernia in dairy cattle with the aid of genetic markers, Weller J.I. $ 105,000/105,000. # 59,65

1999-02 The Israel Science Foundation 418/99: Construction of resource

population for genetic analysis in immunological traits and disease resistance in Tilapia, Hulata G. $ 120,000/240,000. # 45-48,49,50,53,55,56

2000-03 BARD IS-3103-99CR: Determination of allele frequencies for

quantitative trait loci in commercial animal populations, Weller J.I. $ 165,000/300,000. # 47,52,54,57

2001-02 Chief Scientist of the Ministry of Agriculture 364-0156-01: Application of integrated markers assisted selection index for enhanced improvement of dairy cattle, Weller J.I. $ 20,000/20,000.

# 47,54,57

2001-04 Agricultural Research Organization - director 204-0456: Functional genomics and comparative mapping approaches for the identification of genes affecting milk production in dairy cattle, Shani M. $ 180,000/360,000. # 47,52,54,57,58,60,61,66

2001-04 Agricultural Research Organization 355-0081: Characterization of

genetic variation – a tool for identification of agriculturally important

genes, Weller J.I. $ 120,000/240,000. # 51,52,57,58,60

2002-05 Israel Milk Marketing Board. 364-0173: Characterization of major gene for umbilical hernia in cattle, Weller J.I., Seroussi E. $ 31,500/31,500. # 59,65

2002-05 Israel Milk Marketing Board. 364-0177: Fine mapping of genes

affecting economic traits on chromosome 7 of dairy cattle, Weller J.I., Seroussi E. $ 57,000/57,000. # 78,80

2002-05 Israel Milk Marketing Board 364-0175: Identification of the gene on chromosome 6 in cattle, which affects production of fat and protein in milk, Weller J.I. $ 54,000/54,000. # 47,52,57,61,66

2004-07 Israel Milk Marketing Board 364-0182: Development of database for

paternity confirmation in the Israeli dairy cattle, Weller J.I., Ezra E. $

25,000/25,000. # 62

* 1. BARD IS-3561-04: Elucidating the molecular pathway of sex

determination in cultured tilapias and use of genetic markers for creating monosex populations, Hulata G. $ 150,000/300,000. # 75,79,81

2005-08 BioDisc 364-0205: Population wide system for traceability and genetic characterization in cattle to enhance animal health and food safety, Seroussi E. $ 180,000/800,000. # 82

2006-09 Israel Milk Marketing Board 364-0210: Fine mapping and characterization of the gene for female fertility on BTA7 in cattle, Weller J.I. $ 48,000/48,000. # 78,80

2006-10 European community sixth framework Programme priority 5 Food

Quality and Safety PL 01625-2-SABRE 364-203: Genomics and epigenetics to develop sustainable animal breeding strategies for improved long-term product quality and safety, Weller J.I., Seroussi E. euros 444,000 /13,899,794. # 73,74,76-78,80,82

1. -10 BARD IS-3995-07C: Molecular mechanisms of sex determination in

cultured tilapias, Hulata G. $ 148,000/288,000, # 79,81

* 1. Chief Scientist of the Ministry of Agriculture 356-0486-07: Utilizing variation in the Prolactin gene to produce fish populations adapted to growth in water with different salt levels, Hulata G. $ 75,000/75,000.
  2. Israel Milk Marketing Board. 362-0203: Fine mapping and isolation of the gene affecting milk fat and protein production on chromosome 7 in cattle. Weller J.I., Seroussi E. $ 60,000/60,000. # 78

2013 Chief Scientist of the Ministry of Agriculture 362-0430-13: Development of all-male population of tilapia through O. Aurus and O. Niloticus inter crossing. Seroussi E., Ron M., Shirak A. IS 130,000. # 103.

2011-14 BARD IS-4394-11R: Optimization of methodology for genomic

selection of moderate and large dairy cattle populations, Weller J.I. $ 145,000/290,000. #92,93,98,100,101

2011-15 Israeli Science Foundation 801/11: Identification of genes and

regulation factors for sex determination in tilapia, Ron M., Hulata G., Shirak A. $ 300,000/300,000. #94,95,96,102,103

2014-17 Keren Haminhal: Domestication of the Buri fish and identification of sex determination genes for developing all-female population. Ron M. and Rosenfeld H. IS 280,000. #101,104.

2015-19 Yaka Fund: Production of all-male Guppy progeny. Khor Y., Shirak A. and Ron M. IS 120,000.

2015-18 BARD IS-4794-15 R: Determination of actual polymorphisms responsible for economic trait variation in dairy cattle. Weller J.I., Ron M. and Seroussi E. $ 150,000/300,000.

2018-21 Keren Madaan – Nitzan Teivat Noach. Identification of sex determination gene in Buri fish towards development of all-female population. Ron M. and Rosenfeld H. IS 660,000.

8.Teaching at the Hebrew University**:**

1. Supervision of Master's and doctoral degree students.

Master's degree students:

1988-90 Idit Genis, co-supervisor – Prof. Moshe Shani, #17

1990-92 Ayelet Avraham, co-supervisor – Prof. Moshe Shani, #19, 20

1992-94 Anat Yanai, co-supervisor – Prof. Moshe Shani, #24

1992-94 Yoela Blank, co-supervisor – Prof. Moshe Shani, #29, 30, 31

1993-95 Daniel Hochman, co-supervisor – Prof. Moshe Shani, #33, 34

1998-00 Ilana Tager-Cohen, co-supervisor – Prof. Orna Halevi, #60, 62, 65

1999-01 David Kliger, co-supervisor – Prof. Orna Halevi, #48, 52, 60

1999-01 Marina Golik, co-supervisor – Prof. David Wolfenson, #54, 57, 60, 62

2001-04 Orit Alus, co-supervisor – Prof. Avigdor Cahaner, #60, 62

2003-05 Galit Israeli, co-supervisor – Prof. Moshe Shani, #77

2003-07 Noam Zilberman, co-supervisor – Prof. Gideon Hulata, #71, 75, 79

2006-09 Barak Porat, co-supervisor – Dr. Joel Weller, #87

2008-10 Ariel Villan, co-supervisor – Prof. Gideon Hulata, #91

2010-12 Lior Dor, co-supervisor – Prof. Gideon Hulata, #101, 104

Doctoral degree students:

1992-97 Moshe Band, "The use of SINE sequences for locating microsatellites and gene mapping in cattle" (1997) 51 pages (in Hebrew) #19-21, 24, 26, 28-31, 33, 35-41, 44.

1999-03 Avner Cnaani, co-supervisor – Prof. Gideon Hulata, "Construction of resource population for genetic analysis of immunological traits and disease resistance in Tilapia" (2003), 98 pages (in Hebrew) #45- 46, 48-50, 53, 55, 56, 63, 64, 75

2001-06 Miri Cohen, co-supervisor – Dr. Joel Weller, "From QTL to the gene on BTA6 for production traits in cattle" (2006), 83 pages (in Hebrew) #61, 66, 69, 72, 74

2006-12 Giora Glick, co-supervisor – Dr. Joel Weller, "Implementation of novel methods to identify and characterize DNA sites affecting production and reproduction in the Israeli dairy cattle" #85, 90, 92, 93, 98, 100.

2007-13 Orly Eshel, co-supervisor – Prof. Gideon Hulata, "Molecular

mechanism of sex determination in cultured tilapias” #86, 94, 102

2014-2020 Lior Dor, co-supervisor – Dr. Eyal Seroussi, "Development of genetic

maps and detection of sex determination mechanisms in cultured Buri and Guppi " #107, 109, 113, 115

2018-2022 Arie Curzon, co-supervisor – Dr. Eyal Seroussi, "Identification of sex determination gene in Buri and Tilapia fish towards development of all -female and –male populations" #112, 114-121

b) Post-doctoral Fellows and Visitors:

1986-87 Ottmar Distl, "Genetic analysis of veterinary recorded reproduction disorders" #16.

1998-00 Yaniv Palti, "Mapping sex determination genes in Tilapia" #45, 46, 48, 50.

2000 Erez Brem, "Etiology and genetic background of bovine umbilical hernia”.

2000-01 Andrey Shirak, "Deleterious genes in inbred lines of Tilapia" #46, 48

2004-05 Sharon Reichav, "Validation of QTL for fertility on BTA7" #77.

2006-07 Renneta Melon, "Genetic control of sexing in tilapia" #83

2014-17 Orly Eshel, "Molecular mechanism of sex determination in cultured

tilapia”

c) Courses Taught:

1992 External teacher, Faculty of Agriculture, Rehovot.

Course on: "Principles in Animal Breeding" for Bachelor's

2006-2013 Adjunct Professor, Faculty of Agriculture, Rehovot.

Course on: "Genetic variation and its applications" for Master's

**Prof. Micha Ron**   **2023**

**LIST OF PUBLICATIONS**

**1. Doctoral dissertation**

Genetic and physiological associations between milk production and fertility

traits in rats and dairy cattle. M. Soller and A. Cahaner supervisors (1986).

Hebrew University of Jerusalem, Faculty of Agriculture, Rehovot. #4, 5.

**2.** **Books**

**Ron M.** (1988).

Sire evaluation procedures practiced in Israel. 81 pp. (In English).

Cahaner, A., **Ron M.** and Levin I. (1992).

Selected problems in experimental design and their statistical analysis.

5th edition. 215 pp. (In Hebrew).

**3.** **Books edited**: None

**4.** **Chapters in Collections**

Weller J.I. and **Ron M**. (2009)

Molecular genetic livestock improvement. Blackwell Publishing. Editor B. Barendse. Chapter 7. Dairy cattle. (In English). 44 pages.

**5.** **Articles**

Each reference is followed by the ISI information:

#.### Journal impact factor; ##/### ISI ranking ; ### No. of citations

excluding self-citations

\* The most important publication

\*\* Among the 100 most highly cited papers published in JDS since 2016

**A. Articles in refereed journals**

1. Bar-Anan R., **Ron M.** and Wiggans G.R. (1983). Associations among progeny tests using single or pooled lactation records. *J. Dairy Sci.* **66**:595-600. 2.284; 2/44; 5.

2. Bar-Anan R. and **Ron M.** (1983). Genetic correlations among progeny groups for type traits, milk yield, yield persistency and culling rates. *J. Dairy Sci.* **66**:2438-2440. 2.284; 2/44; 1.

3. **Ron M.** and Hillel J. (1983). Genotype x environment interaction in dairy cattle and its role in breeding programs. *Theor. and Appl. Genet.* **66**:93-99. 2.715; 61/131; 2.

4. Bar-Anan R., **Ron M.** and Wiggans G.R. (1984). Associations among milk yield, yield persistency, conception and culling of Israeli Holstein dairy cattle. *J. Dairy Sci.* **68**:382-386. 2.284; 2/44; 18.

5. **Ron M.**, Bar-Anan R. and Wiggans G.R. (1984). Factors affecting conception rates of Israeli Holstein cattle. *J. Dairy Sci.* **67**:854-860. 2.284; 2/44; 59.

6. Amir D., Gacitua H., **Ron M.** and Lehrer A.R. (1986). Seasonal variation in semen characteristics and the fertility of Finn-cross rams subjected to frequent ejaculation. *Anim. Reprod. Sci.* **10**:75-84. 2.186; 3/44

7. Amir D., Pines M., Gacitua H. and **Ron M.** (1986). The seasonal pattern of testosterone secretion in Finn-cross rams in Israel. *Anim. Reprod. Sci.* **10**:245-250. 2.186; 3/44; 13.

8. **Ron M.**, Bar-Anan R. and Weller J.I. (1986). Sire and maternal grandsire effects on calving difficulty and calf mortality in Israeli Holsteins. *J. Dairy Sci.* **69**:243-247. 2.284; 2/44; 5.

9. Bar-Anan R., **Ron M.** and Weller J.I. (1987). Dairy cattle improvement - The Israeli experience. *Acta Agron. Hung.* **36**:173-181.

10. Bar-Anan R., Heiman M., **Ron M.** and Weller J.I. (1987). Comparison of proven sires from five Holstein-Friesian strains in high- yield Israeli dairy herds. *Livest. Prod. Sci.* **17**:305-322. 1.131; 16/44; 11.

11. Weller J.I. and **Ron M.** (1987). A note on the effect of observations with missing data on genetic correlation estimates. *Theor. and Appl. Genet.* **74**:549-553. 2.715; 61/131; 3.

12. Weller J.I., **Ron M.** and Bar-Anan R. (1987). Effects of persistency and production on the genetic parameters of milk and fat yield in Israeli-Holsteins. *J. Dairy Sci.* **70**:672-680. 2.284; 2/44; 2.

13. **Ron M.**, Ezra E. and Weller J.I. (1990). Genetic analysis of twinning rate in the Israeli Holstein cattle. *Genet. Select. Evol.* **22**:349-359. 1.778; 91/131; 16.

14. Ezov N., Maltz E., Yaron R., Lewis G.S., Schindler D., **Ron M.**, Aizinbud E. and Lehrer, A.R. (1990). Cell density, fluid volume and electrolyte content of bovine vulvar tissue during oestrus and dioestrus. *Anim. Reprod. Sci.* **22**:281-288. 2.186; 3/44; 8

15. Schindler D., Lewis G.S., Rosenberg Miriam., Tadmor A., Ezov N., **Ron M.**, Aizinbud E. and Lehrer A.R. (1990). Vulvar electrical impedance in periparturient cows and its relation to plasma, oestradiol-17b and PGFM. *Anim. Reprod. Sci.* **23**:283-292. 2.186; 3/44; 14.

16. Distl O., **Ron M.**, Francos G., Mayer E. and Krausslich H. (1991). Genetic analysis of veterinary recorded reproduction disorders in Israeli-Holstein dairy cows. *Theriogenology* **35**: 827-836. 1.898; 15/24; 4.

17. **Ron M.**, Genis I., Ezra E., Yoffe O., Weller J. I., and Shani M. (1992) Mitochondrial DNA polymorphism and determination of effects on economic traits in dairy cattle. *Animal Biotechnology* **3**: 201-219. 1.182; 11/44.

18. Weller J. I. and **Ron M.** (1992). Genetic analysis of fertility traits in Israeli Holsteins by linear and threshold models. *J. Dairy Sci.* **75**:2541-2548. 2.284; 2/44; 40.

19. Avraham A., Band M., Yoffe O., Shani M. and **Ron M.** (1993) Bovine dinucleotide repeat polymorphism at the ARO26 locus. *Anim. Genet.* **24**:147. 2.670; 1/47

20. Avraham A., Band M., Yoffe O., Shani M. and **Ron M.** (1993) Bovine dinucleotide repeat polymorphism at the ARO28 locus. *Anim. Genet.* **24**:147. 2.670; 1/47

21. **Ron M.**, Band M., Wyler A. and Weller J.I. (1993) Unequivocal determination of sire allele origin for multialleleic microsatellites when only sire and progeny are genotyped. *Anim. Genet.* **4**:171-176. 2.670; 1/47; 2.

22. **Ron M.**, Yoffe O., and Weller J.I. (1993) Sequence variation in D loop mtDNA of cow lineages selected for high and low maternal effects on milk production. *Anim. Genet.* **24**:183-186. 2.670; 1/47; 16.

23. **Ron M.**, Yoffe O., Ezra E., Medrano J., and Weller J.I. (1994). Determination of milk protein genotype effects on production traits in Israeli Holstein cattle. *J. Dairy Sci.* **77**(4):1106-1113. 2.284; 2/44; 27.

24. **Ron M.**, Band M., Yanai A., and Weller J.I. (1994) Mapping quantitative trait loci with DNA microsatellites in a commercial dairy cattle population. *Anim. Genet.* **25**:259-264. 2.670; 1/47; 26.

25. Barendse W., Armitage S.M., Kossarek L.M., Shalom A., Kirkpatrick B.W., Ryan A.M., Clayton D., Li L., Neibergs H.L., Zhang N., Grosse W.M., Weiss J., Creighton P., McCarthy F., **Ron M.**, Teale A.J., Fries

R., McGraw R.A., Moore S.S., Georges M., Soller M., Womack J.E.,

and Hetzel D.J.S. (1994) A genetic linkage map of the bovine genome. *Nature Genetics* **6**:227-235. 24.176; 1/131; 378.

26. Band M., and **Ron M.** (1994) Isolation of AGC repeats located 3' to bovine SINE. *Anim. Genet.* **25**:281-283. 2.670; 1/47; 3.

27. Beever J.E., Da Y., **Ron M.**, and Lewin H.A. (1994) A genetic map of nine loci on bovine chromosome 2 (BTA2). *Mammalian genome* **5**:542-545. 2.279; 72/131; 24.

28. Band M., and **Ron M.** (1994) ARO62: A bovine polymorphic (AGC)n trinucleotide microsatellite. *Anim. Genet.* **25**:371. 2.670; 1/47; 1.

29. **Ron M.**, Blank Y., and Band M. (1995) Determination of the optimal tissue source and number of microsatellites for detection of zygotic origin of cattle twins. *Animal Biotechnology.* **6**:27-37. 1.182; 11/44.

30. **Ron M.**, Lewin H.C, Da Y., Band M., Janai A., Blank J., Feldmesser E. and Weller J.I. (1995) Prediction of informativeness of progeny for detection of economic trait loci in dairy cattle with the aid of microsatellites genetic markers. *Anim. Genet.* **26**:439-441. 2.670; 1/47; 8.

31. **Ron M.**, Blank Y., Band M., Ezra E. and Weller J.I. (1996) Misidentification rate in the Israeli dairy cattle population and implications for genetic improvement. *J. Dairy Sci.* **79**:676-681. 2.284; 2/44; 29.

32. Weller J.I., Wiggans G.R., VanRaden P.M. and **Ron** M. (1996) Application of canonical transformation to detection of quantitative trait loci with the aid of genetic markers in a multi-trait experiment. *Theor. and Appl. Genet.* **92**: 998. 2.715; 61/131; 45.

33. **Ron M.**, Verner N., Feldmesser E., Hochman D., Band M. and Shani M. (1996) Amplification of the conserved cytochrome b locus as a versatile internal control for PCR analysis in animals. *BioTechniques* **20**:604-606. 2.462; 28/56; 2.

34. Hochman D., Zaron Y., Dekel I., Feldmesser E., Shani M., Medrano J.F. and **Ron M.** (1996) Multiple genotype analysis and sexing of IVF bovine embryos. *Theriogenology* **46** (6): 1063-1075. 1.898; 15/24; 8.

35. Band M. and **Ron M.** (1996) Creation of a SINE enriched library for the isolation of polymorphic (AGC)n microsatellite markers in the bovine genome. *Anim. Genet.* **27** (4): 243-248. 2.670; 1/47; 8.

36. Band M. and **Ron M.** (1997) Heterozygote deficiency caused by a null allele at the bovine ARO23 microsatellite. *Animal Biotechnology* **8**:187-190. 1.182; 11/44; 4.

37. Barendse W., Vaiman D., Kemp S., Sugimoto Y., Armitage S., Williams J., Sun S., Eggen A., Agaba M., Aleyasin A., Band M**.**, Bishop M., Biutkamp J., Byrne K., Collins F., Cooper L., Coupettiers W., Denis B., Drinkwater R., Easterday K., Ennis S., Erhardt G., Ferretti L., Gao Q., Georges M., Gurung R., Harlizius B., Hawkins G., Hetzel J., Hirano T., Joergenson C., Kessler M., Kirkpatrick B., Konfortov B., Kuhn C., Lenstra H., Leveziel H., Lewin H., Leyhe B., Li L., Martin Burriel I., McGraw R., Miller R., Moody D., Moore S., Nakane S., Nijman I., Olsaker I., Pomp D.C, Rando A., **Ron M**., Shalom A., Soller M., Teale A., Thieven U., Vage D., Varvio S., Velmalla R., Villki J., Weikard R., Woodside C., Womack J., Zanotti M., Zaragoza P. (1997)

A medium density genetic linkage map of the bovine genome. *Mammalian Genome* **8**:21-28. 2.279; 72/131; 220.

38. Band M., Vaiman D., Cribiu E.P. and **Ron M.** (1997) Four bovine microsatellites derived from a sorted chromosome 25 Library. *Anim. Genet.* **28**:239. 2.670; 1/47.

39. Band M., Eggen A., Bishop M.D. and **Ron M.** (1997) ARO81: a polymorphic X-linked bovine microsatellite. *Anim. Genet.* **28**:244. 2.670; 1/47; 0.

40. Band M., Eggen A., Bishop M.D. and **Ron M.** (1997) Isolation of microsatellites from a bovine YAC clone harboring the SOD1 gene*. Anim. Genet.* **28**:363-366. 2.670; 1/47; 3.

41. Band M. and **Ron M.** (1998) Determination of allele frequency from DNA pools using bovine trinucleotide microsatellites. *Animal Biotechnology* **9**:35-45. 1.182; 11/44; 3.

42. Weller J.I., Song J.Z., Heyen D.W., Lewin H.A. and **Ron M**. (1998)

A new approach to the problem of multiple comparisons in the genetic dissection of complex traits. *Genetics* **150**:1699-706. 4.242; 32/131; 83.

43. Da Y., VanRaden P.M., **Ron M.**, Beever J.E., Paszek A.A., Song J.,

Wiggans G.R., Ma R., Weller J.I., and Lewin H.A. (1999) Standardization and conversion of marker polymorphism measures. *Animal Biotechnology* **10**:25-35. 1.182; 11/44; 1.

44. Heyen D.W., Weller J.I., **Ron M**., Band M., Beever J.E., Feldmesser E., Da Y., Wiggans G.R., Van Raden P.M. and Lewin H.A. (1999) A genome scan for quantitative trait loci influencing milk production and health traits in dairy cattle. *Physiological Genomics* **1**:165-175. 3.789; 41/131; 72.

45. Palti Y., Tinman S., Cnaani A., Avidar**,** Y.,  **Ron M.**, and HulataG.

(1999). Comparative study of biochemical and nonspecific immunological parameters in two tilapia species (*Oreochromis aureus* and *O. mossambicus*). *The Israeli Journal of Aquaculture – Bamidgeh*. **51**(4):148-156; 3.

46. Palti, Y., Shirak, A., Cnaani, A., Feldmesser, E., Avtalion, R.R.,

Hulata G., and **Ron****M.** (2001). A microsatellite locus has more than one copy in the genome of two tilapia species (*Oreochromis aureus* and *O. niloticus*). *Anim. Genet.* ***3*:**40-41*.* 2.670; 1/47; 1.

47. **Ron M.**, Kliger D., Feldmesser E., Seroussi E., Ezra E. and WellerJ.I. (2001)

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of Russian sturgeon (*Acipenser gueldenstaedtii*). *Anim. Genet.* (In press).

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concordant with femaleness in cichlids harboring the LG1

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regulators of sex determination in fish and other vertebrates – a review. *Int. J.*

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**B. Articles in non-refereed journals** **(Total of >100; Last 15 years)**

1. **Ron M.**, Domochovsky R., Ezra E. and Weller J.I. (2008)

Accuracy testing of paternity determination based on data of inseminator and herd manager. *Meshek ha-Bakar vehe-Halav* 333: 102-103 (In Hebrew)

2. **Ron M.,** Weller J.I. and Ezra E. (2008). Genomic selection using an array of 54,001 genetic markers – Technological breakthrough and revolution in dairy cattle breeding. *Meshek ha-Bakar vehe-Halav 336:*  50-53 (In Hebrew)

3. Porat B. Weller J.I., Band M. and **Ron M** (2009) Development of a diagnostic kit for chimaerism of bovine twins. *Meshek ha-Bakar vehe-Halav 339:*  82-84 (In Hebrew)

4. Weller J.I. and **Ron M.** (2009) Selection against lethal mutations for genetic diseases. *Meshek ha-Bakar vehe-Halav* 340: 108-109(In Hebrew)

5. **Ron M.,** Shirak A. Glick G., Ezra E., Zeron Y. and Weller JI. (2011) Genetic analysis of beef cattle using DNA arrays. *Yediot LaBokrim* 129: 20-22 (In Hebrew)

6. **Ron M.,** Shirak A. Glick G., Ezra E., Zeron Y. and Weller JI. (2012) Genetic analysis of sires using DNA arrays for management and breeding. *Meshek ha-Bakar vehe-Halav 359: 68-69* (In Hebrew)

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9. **Ron M.**, Ezra E., and Weller JI. (2016) From searching for genetics markers to genomic selection in dairy cattle - from a genetic dream to reality.

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11. **Ron M.** and Weller JI. (2016) Identification of quantitative genes in dairy cattle in the era of genomic selection. *Meshek ha-Bakar vehe-Halav 385:* *76-80* (In Hebrew)

12. **Ron M.**, Ezra E., and Weller JI. (2017)A perspective on the future of genomic selection in dairy cattle. *Meshek ha-Bakar vehe-Halav* 389: 76-86 (In Hebrew)

13. Ezra E.,Weller JI., and **Ron M.** (2018)Questions and answers regarding genomics in dairy cattle. *Meshek ha-Bakar vehe-Halav* 393: 72-74 (In Hebrew)

14. **Ron M.** (2018) Genomic selection not only in cattle. *Harefet Vehachalav* 85: 50-51 (In Hebrew)

15. **Ron M.** (2020) The first and last publication: milestones in 40 years of genetic research in animals I. In cattle. *Meshek ha-Bakar vehe-Halav 409: 80-86* (In Hebrew)

16. **Ron M.** (2021) The first and last publication: milestones in 40 years of genetic research in animals II. On genetic research in animals. *Meshek ha-Bakar vehe-Halav 410: 86-89* (In Hebrew)

**6. Participation in scientific conferences, lectures, and other activity (Total of >100; Last 15 years)**

1. Shirak A., Lee B.-Y., Golik M., Howe A., Kocher T.D., Hulata, G., **Ron M**.

and Seroussi E. (2008)Copy number variation of lipocalin family genes for Male-specific proteins in tilapia and its association with gender. The 11th Israeli Bioinformatics Symposium. Tel-Aviv, Israel. *IBS2008*. UBS06abs123. Poster.

2. Glick G., Golik M., Shirak A., Seroussi E., Weller J. and **Ron M.** (2008)

Detection and analysis of a quantitative trait locus affecting fertility in dairy cattle. 20th Ruminant Science Conference, Jerusalem, Israel. P. 142. Lecture.

3. Porat B. and **Ron M.** (2008) Diagnosis of freemartins in multi-gender bovine twins. 20th Ruminant Science Conference, Jerusalem, Israel. P. 144. Lecture.

4. Karniol B., Shirak A., Cahana A., Tal A., Weller J.I., **Ron M.**, Skalski Y., Seroussi E. (2008) The development of a 25-plex SNP assay for traceability in cattle. 20th Ruminant Science Conference, Jerusalem, Israel. P. 152. Lecture.

5. Weller J.I. and **Ron M**. (2008) Genomic selection using an array of 54,001 genetic markers – Technological breakthrough and revolution in dairy cattle breeding. 20th Ruminant Science Conference, Jerusalem, Israel. P. 156. Lecture (Invited).

6. Shirak A., Karniol B., Cahana A., Tal A., Weller K.I., **Ron M.**, Skalski Y., Seroussi E. and Kam M. (2008) Traceability system for cattle based on genotyping of 25-plex using SNnapShot method. International conference of Agricultural Engineering & Industry Exhibition. Crete, Greece. Lecture

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8. Glick G., Golik M., Shiraq A. Seroussi E., Weller J.I. **Ron M.** (2008)

Linkage Disequilibrium mapping of QTL on chromosome 7 affecting female fertility and twinning rat in Israeli Holstein cattle. *31st Conference of the International Society for Animal Genetics*, Amsterdam, Holland. 2162. Poster.

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10. Weller J. I., Ezra E., Zeron Y., Glick G., Seroussi E., and **RonM.** (2009)

Revolution in breeding: selection of sires based on array of 54,001 genetic markers – Preliminary results. *21st Ruminant Science Conference*, Jerusalem, Israel. P. 73. Lecture (Invited).

11. Weller J. I., Glick G., Ezra E., Zeron Y., Seroussi E., and **RonM.** (2009) Paternity validation and estimation of genotyping error rate for the BovineSNP50 BeadChip. Late Break original Abstract Session. *Joint annual meeting of the American Dairy Science Association,* Montreol, Canada. Lecture & Poster.

12. Weller J. I., Glick G., Golik M., Ezra E., Zeron Y., Seroussi E., and **Ron M.** (2009) Analysis of quantitative trait loci affecting female fertility and twinning rate in Israeli Holsteins on chromosome 7. *Joint annual meeting of the American Dairy Science Association,* Montreol, Canada. Lecture.

13. Glick G., Golik M., Shirak A., Ezra E., Zeron Y., Seroussi E., **Ron M.** and Weller JI (2009) Analysis of quantitative trait loci affecting female fertility and twinning rate in Israeli Holsteins. *EAAP meeting*. Barcelona, Spain.

14. Eshel O., Band M., Feldmesser E., Zak T., Shirak A., Hulata G., and **Ron M.** (2012) *The 1st graduate students conference in genetics, genomics and evolution, Ben* Gurion University of the Negev, Israel*.* Lecture p. 22

15. **Ron M.** (2012) Review of research project on: "Bovine genetic variation and disease susceptibility". Dublin, Ireland 23.10.12.

**7. Patents**

1. Provisional US Patent Appl. #60/694,430 filed 28 June (2005).

Uses of a missense mutation in the Bovine *ABCG2* gene with a major effect

on the QTL on chromosome 6 affecting milk yield and composition in

cattle.

Inventor(s): Seroussi E., Lewin H.A., Band M.R., Cohen-Zinder M.,

Drackley J.K., Larkin D.M., Loor J.I., **Ron M.**, Shani M., Weller J.I.

2. Provisional US Patent Appl. #60/696,294 filed 1 July (2005).

Identification of a missense mutation in the Bovine *ABCG2* gene with a

major effect on the QTL on chromosome 6 affecting milk yield and

composition in cattle.

Inventor(s): Seroussi E., Lewin H.A., Band M.R., Cohen-Zinder M.,

Drackley J.K., Larkin D.M., Loor J.I., **Ron M.**, Shani M., Weller J.I.

3. Patent Appl. No. PCT/US2006/025117 filed 28 June (2006).

Bovine *ABCG2* gene mutations and uses thereof.

http://www.wipo.int/pctdb/en/wo.jsp?WO=2007002735

Inventor(s): Seroussi E., Lewin H.A., Band M.R., Cohen-Zinder M.,

Drackley J.K., Larkin D.M., Loor J.I., **Ron M.**, Shani M., Weller J.I.

4. Provisional Patent Appl. No. 182154 filed 22 March (2007).

DNA traceability system in cattle, long-term DNA banking and

genotyping by multiplexing of SNP markers.

Inventor(s): [Seroussi](http://apps.isiknowledge.com/DIIDW/CIW.cgi?SID=Y1Mc2f9dKE37AJc@Mil&Func=OneClickSearch&field=AU&val=SEROUSSI+E&curr_doc=1/1&Form=FullRecordPage&doc=1/1) E., Shirak A., Weller J.I., **Ron M.**

5. Patent Appl. No. PCT/IL2009/000588 filed 14 June (2009).

Genotyping method and means thereof for use in traceability schemes.

http://www.wipo.int/pctdb/en/wo.jsp?WO=2009153779

Inventor(s): Cahana A., Shirak A., Karniol B., Skalsky Y., Weller JI., **Ron**

**M.** and [Seroussi](http://apps.isiknowledge.com/DIIDW/CIW.cgi?SID=Y1Mc2f9dKE37AJc@Mil&Func=OneClickSearch&field=AU&val=SEROUSSI+E&curr_doc=1/1&Form=FullRecordPage&doc=1/1) E.

6. Patent Appl. No. PCT/IL2020/0000 filed 01 June (2020).

A novel c.1759T>G variant in the vertebrate *FSHR* orthologous gene

is associated with male determination in flathead grey mullet (*Mugil*

*cephalus*)

Genotyping method and means thereof for use in traceability schemes.

http://www.wipo.int/pctdb/en/wo.jsp?WO=2009153779

Inventor(s):  Shirak A., Rosenpheld H., **Ron M.** and [Seroussi](http://apps.isiknowledge.com/DIIDW/CIW.cgi?SID=Y1Mc2f9dKE37AJc@Mil&Func=OneClickSearch&field=AU&val=SEROUSSI+E&curr_doc=1/1&Form=FullRecordPage&doc=1/1) E.

**8. Prizes**

1. Beltrami award (2016) for technical innovation and research in livestock

industry. Cremona International Livestock Exhibitions, Italy.

**Scientific biography**

Four different disciplines (Quantitative genetics, Molecular genetics, Genomics and BioInformatics) have been used in the course of my research towards genetic improvement of dairy cattle and fish.New genetic infrastructures have been produced such as genetic markers, genetic maps, experimental designs, statistical and laboratory methods to allow research and applications at the DNA level towards domestication of wild fish, DNA barcoding of Mediterranean fish species, sex determination in cultured fish, and genetic identification and detection of genes of economic importance in cattle. The recent launch of “genomic selection” in the Israeli dairy cattle population reflects the achievement of the long-term goal of marker assisted selection. In Israel there are 120,000 dairy cows of which 90% are recorded for production, reproduction and disease traits. Methodologies for genetic evaluation of sires and cows for economical traits were developed and improved during the last four decades. Genomic selection based on genotyping of hundreds of bull calves each year and selection of sires at age of one year as compared to 5.5 years previously, for tens of thousands of single nucleotide polymorphisms was implemented in the Israeli population in 2013 and affected all aspects of the breeding scheme. Highly accurate paternity validation or identification based on comparison of progeny and parent genetic markers' genotypes is a virtually no cost byproduct of genotyping that increases accuracy of genomic evaluations as compared to phenotypic-based genetic evaluations. The genomic revolution has led to shortened generation intervals and enhanced genetic improvement of up to twofold.

The scientific and agricultural achievements are presented.

**1. Quantitative genetics**

In the beginning the main effort was to conduct genetic analysis in cattle for milk production traits and secondary traits such as conception rate, twinning rate, difficult calving, persistency etc., to estimate genetic parameters and establish the computation of genetic evaluations of sires (1-5, 8-13, 16, 18). Bi-annual fertility reports were designed to estimate the effects of inseminators and sires on conception rate. Inseminators were evaluated for their “conception rates”, thus introducing quality control to their system. Quantifying the adverse effects of summer months on conception altered the insemination policy to avoid insemination of cows and heifers in specific months (4, 5, 18). An international experiment for comparison of genetic merits of different breeds was conducted under conditions of intensive management in Israel thus influencing international trade of semen (10). Milk protein was determined as a primary breeding goal and was included in the selection index in Israel together with secondary traits such as somatic cells and fertility at low weights. As a whole, together with Dr. Weller we lead for the last four decades the breeding program of Israeli dairy cattle from the classical progeny test to the recent launch of genomic selection.

**2. Molecular genetics**

During my post-doctoral studies I was exposed to a variety of methods in molecular genetics. I studied the polymorphism in mitochondrial DNA and its possible effects on milk production in cattle. DNA analysis of the mitochondria showed the existence of heteroplasmy within cows (17, 22). The conserved cytochrome b locus was suggested as a versatile internal control for PCR analysis in animals (33). I expanded my interest for detection of genetic markers, mainly di- and tri- nucleotide microsatellites, in the bovine nuclear genome. I participated in building the bovine genetic map by isolating microsatellites which harbor (TG)n and (AGC)n stretches and localizing these markers, by linkage analysis, in the international bovine map. These markers were mapped and their polymorphism, informativeness and ease of scoring were studied (21, 30, 43). Structural genes and genetic markers were mapped using international reference families and somatic cells lines (19-21, 25; 26, 28, 30, 35-41, 43, 59, 65). The markers were developed both randomly throughout the genome and in specifically targeted chromosomal regions. Similar efforts to map genetic markers were pursued in tilapia (46, 49, 53, 56). SNP markers were developed and mapped in both cattle and tilapia (75). A simplified semi-automated method for DNA extraction from tilapia fin tissue was also developed (71). We invented and tested a method to sample vaginal cells from cows as a source of DNA (54). A high-throughput procedure for paternity tests in cattle was developed by the use of microsatellite genetic markers, robotics, different fluorescent dyes and DNA sequencer (29). Applications of genetic markers were developed for bovine genetic identification, pedigree verification, traceability and detection of twins, freemartin and gender (31, 62, 73). Genetic tests were applied for dairy farms and plants and for forensic cases of theft. A misidentification rate of 11% was estimated for paternity of cows as recorded in the Israeli dairy cattle herd-book by sampling the population and genotyping genetic markers (31, 62). This error rate would reduce the rate of genetic improvement by 5.5% as compared to a situation of no paternity errors. *SNaPshot*, a primer extension-based method was used to multiplex 25 SNPs for identity control (82). DNA barcoding using the mitochondrial CO1 gene was established for the Israeli endemic and introduced cichlids and Mediterranean fish species (83, 106). First generation linkage map was constructed for the White Grouper based on microsatellites detection from next generation sequencing data (101, 104).

**3. Genomics**

During my two years' sabbatical I learned a variety of genomic procedures. The whole-genome search for QTL was applied in both cattle and tilapia. Statistical methods such as canonical transformation and false discovery rate were applied to address the problem of multiple comparisons in the genetic dissection of complex traits (24, 32, 42, 44). Fine mapping of QTL on BTA6 showed that up to three genes in this chromosome may be segregating in the population. The central QTL was located with 4 cM support interval (47). A list of bovine genes based on the orthologous region in human has been suggested (61). A modified granddaughter design was developed to determine the frequency of QTL alleles (53). *ABCG2* was finally identified as the causative gene responsible for the QTL on BTA6 affecting milk yield and composition (66). The major gene for umbilical hernia disorder was mapped in cattle (65). A microarray analysis yielded a bovine database of candidate genes for QTL (cgQTL) (77). Fine mapping of QTL for fertility and somatic cells scores is underway on BTA7 (78, 80). Genes with deleterious alleles were detected in an inbred line of tilapia (Oreochromis aureus) using genetic markers. The onset of the deleterious process was detected at early developmental stages by day four after fertilization. Genome-scan search revealed two markers that are linked to sex ratio distortion genes (48). Candidate genes for sex determination in tilapia were mapped (50, 75, 79, 81, 86, 94, 97, 102, 103). The concept of identification of quantitative genes in livestock "from QTL to QTN – winning by points rather than knock-out" is presented in a review (76), describing the complexity of gene identification and the need to support the finding of a QTN by applying a battery of methodologies and techniques in genomics and statistics. Recently the array of Illumina which contains 54,001 SNP sites in the bovine genome was used to genotype 1500 Israeli sires with breeding values for economic traits. Preliminary results showed the existence of scientific, technological and breeding infrastructure for selection of sires based on SNP data e.g., genomic selection, thus replacing the classical breeding program that was launched in 1953 (92, 99-100, 111). In addition, paternity and maternity validation was demonstrated using the SNP array (85, 98). A perspective on the future of genomic selection in dairy cattle was devised (108). Construction of linkage map for the White Grouper constitutes an infrastructure for breeding and domestication through maintenance of genetic variation (101, 104). Similar study of identification of genetic markers and construction of first generation linkage map for the Flathead grey mullet fish was completed (107). Genetic markers were found in complete linkage to the sex determination region. Thus, there is a genomic and genetic infrastructure for mating together with sex reversion towards production of all-female population.

**4. BioInformatics**

Application of positional cloning was one of the crucial tools that led to the identification of the *ABCG2* gene which underlies the QTL for milk production traits in cattle (53, 56, 66). *In-silico* analysis was used for putative mapping of tilapia genes (53) and SNP detection in both cattle and tilapia (61, 66, 72, 75). Comparative mapping of genes was carried out between human and cattle and among fish strains (66, 75). Sex distortion in tilapia was explored with the aid of genetic markers and candidate genes for sex determination (50, 86, 94, 97). Web-based bioinformatic tools and products were developed (<http://cowry.agri.huji.ac.il/>). Computer programs have been developed to detect shift mutations in sequencing trace files (51) and mask repeats in tilapia sequences (84). Application of haplotype analysis was developed for pedigree genetic markers data (69). By analysis of microarray data and comparative mapping we constructed a data base of candidate genes for QTL of milk production traits in cattle (77). Identification of microsatellite genetic markers based on sequence data and organization of sequence in scaffolds enabled efficient construction of genetic maps (101, 104). Analysis of expression data and microRNA and integration of the data enabled the identification of the *amh* major sex determining gene in tilapia (102, 114).