Mona Koosha

A: General Information

First name: Mona

Last name: Koosha

Nationality: Iranian

Degree: Ph.D. in Biology and Vector Control (Medical Entomology and Vector Control)

Language: Persian, English

B: Work experience

Department of Parasitology and Mycology, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

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D: Education

Postdoctoral Researcher,

Tehran University of Medical Sciences, Iran.
(2020-2023)

Ph.D. in Biology and Vector Control,

Tehran University of Medical Sciences, Iran.
(2013-2020)
GPA:18.7 (First rank postgraduate student)

Thesis title: "Evaluation of RNA silencing effects on some fitness-related genes in *Anopheles stephensi*, the main malaria vector"

M.Sc. in Biology and Vector Control,

Tehran University of Medical Sciences, Iran.
(2008-2011)
GPA:19.16 (First rank postgraduate student)

Thesis title: "Genetic structure and species composition *of Culex pipens* complex in Gilan and Hormozgan provinces, Iran"

E: Publications

E-1) Articles

1. Khaksar S., Latifi A., Mohebali M., Atighehchian M., Moradian A., Asadigandomani H., Rezaian M., Anasori N., **Koosha M.**, Pellegrino K., Izadi S. (**2026**). Nested PCR as a superior diagnostic method for Acanthamoeba keratitis compared to conventional techniques. *Scientific Reports*. 27;16(1):3502.

2. Kamel Urmia H., **Koosha M*.**, Yakhchali B., Moosa-Kazemi S.H., Oshaghi M.A. (**2025**). Environmental persistence and transmission dynamics of Serratia AS1 in mosquito habitats: advancing paratransgenesis for malaria control. *Applied and Environmental Microbiology*. 23;91(12): e01840-25.

3. Saeedi S., Karimian F., Moosa-Kazemi S.H., Nejati J., Bavani M.M., **Koosha M.**, Choubdar N., Khosravi G., Oshaghi M.A. (**2025**). *Wolbachia* infection in Iranian Malaria Vectors: prevalence and biocontrol implications. *Tropical Medicine & International Health*. 30(11):1236-53.

4. Sabeti S., **Koosha M.**, Kazemirad E., Mirabedini Z., Mohebali M., Saberi R., Fakhar M., Hajjaran H. (**2025**). Transcriptional alterations of virulence factors in *Leishmania major* clinical isolates harboring Leishmania RNA virus 2 (LRV2). *BMC Infection Diseases.* 6;25(1):319.

5. Allahmoradi M., Najafi F., **Koosha M.**, Kazemirad E., Latifi A., Naddaf S.R., Mirjalali H., Mohebali M., Hajjaran H., Otranto D., Mowlavi G. (**2024**). Molecular Tracking of *Leishmania major* in an Archived *Rattus norvegicus* Spleen Sample in Iran: A Case Report. *Iranian Journal of Parasitology*.19(4):496-501.

6. Nejati J., Azari-Hamidian S., Oshaghi M.A., Vatandoost H., White V.L., Moosa-Kazemi S.H., Bueno-Marí R., Hanafi-Bojd A.A., Endersby-Harshman N.M., Axford J.K., Karimian F., **Koosha M.**, Choubdar N., Hoffmann AA. (**2024**). The monsoon-associated equine South African pointy mosquito *'Aedes caballus'*; the first comprehensive record from southeastern Iran with a description of ecological, morphological, and molecular aspects. *PLoS One*.19(5): e0298412.

7. Azarm A., **Koosha M.**, Dalimi A., Zahraie-Ramazani A., Akhavan A.A., Saeidi Z., Mohebali M., Azam K., Vatandoost H., Oshaghi M.A. (**2024**). Association Between Wolbachia Infection and Susceptibility to Deltamethrin Insecticide in Phlebotomus papatasi (Diptera: Psychodidae), the Main Vector of Zoonotic Cutaneous Leishmaniasis. *Vector Borne and Zoonotic Diseases*.24(3):159-165.

8. Khosravi G., Akbarzadeh K., Karimian F., **Koosha M.**, Saeedi S., Oshaghi M.A. (**2024**). A survey of *Wolbachia* infection in brachyceran flies from Iran. *PLoS One.* 19(5): e0301274.

9. Mirabedini Z., Mirjalali H., Kazemirad E., Khamesipour A., Samimirad K., **Koosha M.**, Saberi R., Mohammad Rahimi H., Mohebali M., Hajjaran H. (**2023**). The effects of Leishmania RNA virus 2 (LRV2) on the virulence factors of *L. major* and pro-inflammatory biomarkers: an in vitro study on human monocyte cell line (THP-1). *BMC Microbiol*ogy. 23, 398.

10. Ghassemi M., Akhavan A.A., Zahraei-Ramazani A., Yakhchali B., Arandian M.H., Jafari R., Akhlaghi M., Shirani-Bidabadi L., Azam K., **Koosha M.**, Oshaghi M. A. (**2023**). Rodents as vehicle for delivery of transgenic bacteria to make paratransgenic sand fly vectors of cutaneous leishmaniasis in field condition. *Scientific Reports*. 13, 14912.

11. Talebzadeh F., Ghadipasha M., Gharehdaghi J., Raoofian R., Azam K., **Koosha M.**, Oshaghi M.A. (**2023**). Efficiency of mitochondrial genes and nuclear *Alu* elements in detecting human DNA in blood meals of *Anopheles stephensi* mosquitoes: a time-course study. *Parasites and Vectors.* 16, 284.

12. Heydari A., Anlaş S., Bakhshi H., **Koosha M.**, Choubdar N., Panahi-Moghadam S., Oshaghi M.A. (**2023**). Molecular characterization of *Paederus* Spp. (Coleoptera: Staphylinidae, Paederinae) the agent of human linear dermatitis in the Caspian Sea Coast, North of Iran. *Journal of Arthropod Borne Diseases.*17(1):94-104.

13. Choubdar N., Karimian F., **Koosha M.**, Nejati J., Shabani Kordshouli R., Azarm A., Oshaghi M.A. (**2023**). *Wolbachia* Infection in Native Populations of *Blattella germanica* and *Periplaneta americana*, a step toward cockroach biological control. *Plos One.* 18(4): e0284704.

14. Azarm A., Vatandoost H., **Koosha M.,** Akhavan A.A., Mohebali M., Saeidi Z., Dehghan A., Oshaghi M.A. (**2023**). Susceptibility of *Phlebotomus papatasi* (Diptera: Psychodidae) against DDT and Deltamethrin in an Endemic Focus of Zoonotic Cutaneous Leishmaniasis in Iran. *Journal of Arthropod Borne Diseases*.17(4):333-343.

15. Haghshenas, M., **Koosha M.,** Kazemirad E., Dehghan A., Nikmanesh, B., Mowlavi, G. (**2023**). Detection of *Enterobius vermicularis* (*Oxyuris vermicularis*; pinworm) remnants in appendectomies: Its potential importance and the possible genetic variations based on mitochondrial DNA (*cox*1) gene. *PloS One.*18(2) e0281622.

16. Rahmanipour M., Mohebali M., **Koosha M.,** Yasami-Khiabani S., Kazemirad E., Mirjalali H., Hajjaran H. (**2022**). Effect of Leishmania RNA Virus 2 on virulence factors and Cytokines gene expression in human macrophage infected with *Leishmania major*. *Experimental Parasitolog*.246:108459.

17. Karimian F., **Koosha M.,** Choubdar N., Oshaghi M.A. (**2022**). Comparative analysis of the gut microbiota of sand fly vectors of zoonotic visceral leishmaniasis (ZVL) in Iran; host-environment interplay shapes diversity. *PLoS Neglected Tropical Diseases*. 16 (7): e0010609.

18. Shirani-Bidabadi L. Oshaghi M.A., Enayati A.A., Akhavan A.A., Zahraei-Ramazani A., Yaghoobi –Ershadi M.R., Rassi Y., Aghaei–Afshar A., **Koosha M.**, Arandian M.H., Ghanei M., Ghassemi, M., Vatandoost H. (**2022**). Molecular and biochemical detection of insecticide resistance in the Leishmania vector, *Phlebotomus papatasi* (Diptera:Psychodidae) to Dichlorodiphenyltrichloroethane (DDT) and Pyrethroids, in Central Iran. *Journal of Medical Entomology.* 59(4):1347-54.

19. Choubdar N., Karimian F., **Koosha M.,** Nejati J., Oshaghi M.A. (**2021**). Hyalomma spp. ticks and associated Anaplasma spp. and Ehrlichia spp. on the Iran-Pakistan border. *Parasites and Vectors*.14(1):1-8.

20. Heydari A., Oshaghi M.A., Choubdar N., **Koosha, M.**, Karimian F. (**2021**). Aerobic bacterial community of the rice striped stem borer: a step towards finding bacterial candidates for paratransgenesis and RNAi control. International Journal of Plant, Animal and Environmental Sciences. *International Journal of Plant, Animal and Environmental Sciences*. 11(3):456-73.

21. Choubdar N., Karimian F., **Koosha M.**, Oshaghi M.A**. (2021).** An integrated overview of the bacterial flora composition of *Hyalomma anatolicum*, the main vector of CCHF. *PLoS Neglected Tropical Diseases*. 15(6): e0009480.

22. Khanzadeh F., Khaghaninia S., Maleki-Ravasan N., **Koosha M.**, Oshaghi M. A. (**2020**). Molecular detection of *Dirofilaria* spp. and host blood-meal identification in the *Simulium turgaicum* complex (Diptera: Simuliidae) in the Aras River Basin, northwestern Iran. *Parasites and Vectors*. 13(1):1-9.

23. Choubdar N., Oshaghi M.A., Rafinejad J., Pourmand M.R., Maleki-Ravasan N., Salehi-Vaziri M., Telmadarraiy Z., Karimian F., **Koosha M.,** Rahimi-Foroushani A., Masoomi S. **(2019).** Effect of Meteorological Factors on *Hyalomma* Species Composition and Their Host Preference, Seasonal Prevalence and Infection Status to Crimean-Congo Haemorrhagic Fever in Iran. *Journal of Arthropod-Borne Diseases*. 13(3):268-83.

24. Jafari S., Oshaghi M.A., Akbarzadeh K., Abai M.R., **Koosha M.**, Mohtarami F. (**2019**). Identification of forensically important flesh flies using the cytochrome c oxidase subunits I and II genes. *Journal of Medical Entomology*. 56(5):1253-9.

25. Karimian F., Vatandoost, H., Rass,i Y., Maleki-Ravasan N., Mohebali M., Shirazi M. H., **Koosha M**., Choubdar N., and Oshaghi M. A. (**2019**). Aerobic midgut microbiota of sand fly vectors of zoonotic visceral leishmaniasis from northern Iran, a step toward finding potential paratransgenic candidates. *Parasites and Vectors*. 12(1): 1-12.

26. **Koosha M**., Vatandoost H., Karimian F., Choubdar N., and Oshaghi M. A. (**2019**). Delivery of a Genetically Marked *Serratia* AS1 to Medically Important Arthropods for Use in RNAi and Paratransgenic Control Strategies. *Microbial Ecology.*78 (1): 185-94.

27. **Koosha M**., Vatandoost H., Karimian F., Choubdar, N., Abai M. R., and Oshaghi, M. A. (**2019**). Effect of *Serratia* AS1 (Enterobacteriaceae: Enterobacteriales) on the Fitness of *Culex pipiens* (Diptera: Culicidae) for Paratransgenic and RNAi Approaches. *Journal of Medical Entomology.*56 (2):553-9.

28. Karimian F., Vatandoost H., Rassi Y., Maleki-Ravasan N., Choubdar N., **Koosha M.,** Arzamani K., Moradi-Asl E., Veysi A., Alipour H., Shirani M., Oshaghi M.A.(**2018**).*Wsp*-based analysis of *Wolbachia* strains associated with *Phlebotomus papatasi* and *P. sergenti* (Diptera: Psychodidae) main cutaneous leishmaniasis vectors, introduction of a new subgroup wSerg. *Pathogen and Global Health.* 112(3): 152-160.

29. Maleki-Ravasan N., Bahrami, A., Vatandoost H., Shayeghi M., **Koosha M.**, Oshaghi M. A. (**2017**). Molecular Characterization and Phylogenetic Congruence of *Hydropsyche sciligra* (Tricoptera: Hydropsychidae) Using Mitochondrial and Nuclear Markers. *Journal of Arthropod-Borne Diseases*. 11(1): 60–77.

30. **Koosha M**., Oshaghi, M. A., Sedaghat, M. M., Vatandoost, H., Azari-hamidian, S., Abai, M. R., Hanafi-Bojd, A. A. and Mohtarami, F. (**2017)**. Sequence analysis of mtDNA COI barcode region revealed three haplotypes within *Culex pipiens* assemblage. *Experimental Parasitology*. 181: 102-10.

31. Nejati J., **Koosha M.**, Oshaghi M.A. (**2017**). RNA Interference: A Promising Tool in the Control of Important Vector Born Diseases Zika, Dengue Fever, and Malaria. *Majallah-i Danishgah-i Ulum-Pizishki Qum*. 11(3):83-94 [In Persian].

32. Nejati J., Vatandoost H., Yaghoobi-Ershadi M. R., **Koosha M.**, Saghafipour A. (**2017**). Ovitrap; a Global Device for Monitoring and Control of Dengue Fever, Chikungunya Yellow Fever and Zika. *Iranian Journal of Infectious Diseases.* 22(77):1-17 [In Persian].

33. Nutifafa G. G., Hanafi-Bojd A.A., Oshaghi M.A., Dadzie S.K., Vatandoost H., **Koosha M.**, Mohtarami F., Abai M.R., Raeisi A., Akuoko O. (**2017**). Insecticide Susceptibility status of *An. gambiae* sl (Culicidae: Giles) from selected in-land and coastal agricultural areas of Ghana. *Journal of Entomology and Zoology Studies.*5(1): 701-7.

34. Shayeghi M., Nejati J., Shirani-Bidabadi L., **Koosha M.**, Badakhshan M., Mohammadi Bavani M., Arzamani K., Choubdar N., Bagheri F., Saghafipour A., Veysi A., Karimian F., Akhavan A.A., Vatandoost H. (**2015**). Assessing the fauna of aquatic insects for possible use for malaria vector control in large river, central Iran. *Acta Medica Iranica.* 53 (9): 523-32.

35. **Koosha M**., Abai M.R., Abolhasani M., Charedar S., Basseri H.R. (**2013**). Lectin Activity in Gut Extract of *Culex pipiens. Journal of Arthropod-Borne Diseases.*7(1): 23–30.

36. Karimian F., Sedaghat M.M., Oshaghi M.A., Mohtarami F., Dehkordi A.S., **Koosha M.**, Akbari S., Hashemi-Aghdam S. S. (**2011**). Utility of filter paper for preserving insects, bacteria, and host reservoir DNA for molecular testing. *Journal of Arthropod-Borne Diseases.*5(2):42-50.

E-2) Books

1. Yellow Biotechnology (**2016**). Publisher: DA Publications, Iran Editor: Sobhan Behrooz. ISBN: 9786007925867. Hasan Bakhshi**, Mona Koosha**. [In Persian].

F: Research Project Contributions

1. Genetic structure and species composition of *Culex pipens* complex in Gilan and Hormozgan provinces, Iran. Approved by Tehran University of Medical Sciences (TUMS), Project Number: 10480. (Principal investigator)
2. Evaluation of RNA silencing effects of some fitness-related genes in *Anopheles stephensi*, the main malaria vector. Approved by TUMS, Project Number: 30353. (Principal investigator)
3. Determination of dynamics of *Serratia* AS1 bacterium and its effects on fitness of *Culex pipiens* in order to control of mosquito-borne diseases by paratransgenesis and RNAi methods. Approved by TUMS, Project Number: 37653. (Co-investigator)
4. Study on the molecular systematics and host preference of black flies (Diptera: Simuliidae) and the filarial nematodes transmitted by them in the Khoda-afarin region, East Azerbaijan. Approved by TUMS, Project Number: 39440. (Co-investigator)

5. Study of the isolated populations of Maculipennis group members using morpho-taxonomical characters of male genitalia and molecular assays at selected parts of Iran. Approved by TUMS, Project Number: 943693. (Co-investigator)
6. Utility of NGS to identify midgut bacterial community of sand fly vectors in the main zoonotic visceral Leishmaniasis (ZVL) foci in Iran. Approved by National Institute for Medical Research Development (NIMAD), Project Number: 971055. (Co-investigator)
7. *Wolbachia* strains of *Drosophila melanogaster* from Iran, a step toward finding *wMel* strain to use against Arboviruses in mosquito vectors. Approved by NIMAD, Project Number: 963441. (Co-investigator)
8. Serial Section Microanatomy in Identification of *Enterobious vermicularis* and Using Genomic Analysis to Determine the Parasite species in Appendectomies. Approved by Center for Research of Endemic Parasites of Iran (CREPI), Project Number: 43044. (Co-investigator)
9. Evaluation of stability and delivery methods of "*Enterobacter cloacae*" and "*Serratia* As1" bacteria as Paratransgenesis candidates in Esfahan Semi-field conditions to Control Zoonotic Cutaneous Leishmaniasis. Approved by TUMS, Project Number: 48901. (Co-investigator)
10. Comparison of HSP90 and MPI gene expression in Leishmania parasites infected with leishmania RNA virus LRV+ and LRV- using qRT-PCR in Golestan province. Approved by CREPI, Project Number: 52257. (Co-investigator)
11. Survey the utility of blood-sucking mosquitoes (*Anopheles stephensi, Culex pipiens, Phlebotomus papatasi*) in identifying individuals using fingerprinting technique. Approved by TUMS, Project Number: 50450. (Co-investigator)
12. Evaluation of *Wolbachia* (Supergroup A) on *Leishmania major* suppression, susceptibility to Permethrin insecticide, longevity and induced cytoplasmic incompatibility in *Phlebotomus papatasi*, the main vector of zoonotic cutaneous Leishmaniasis in Iran. Approved by TUMS, Project Number: 54455. (Co-investigator)
13. Investigation on Leishmania, *Wolbachia*, and *Spiroplasma* infection and Spiroplasma's male killing in *Phlebotomus papatasi* and *Ph. sergenti* (Diptera: Psychodidae), the main cutaneous leishmaniasis vectors in Bam County, Kerman Province. Approved by TUMS, Project Number: 62927 (Co-investigator)
14. Evaluation of reference genes at different tissues and developmental stages by quantitative Real time PCR (qPCR) in *Anopheles stephensi*, main vector of malaria. Approved by NIMAD, Project Number: 996464. (Co-investigator)
15. Investigation of Acanthamoeba genotypes and subtypes in the corneal scrape samples of patients with amebic keratitis referred to the School of Public Health, Tehran University of Medical Sciences during the years 2022-2024. Approved by CREPI, Project Number: 70408. (Co-investigator)
16. Design of Taqman Multiplex Real-Time PCR method and its evaluation for simultaneous laboratory diagnosis of infectious keratitis causative agents in patients referred to Farabi Eye Hospital. Approved by CREPI and TUMS, Project Number:76167. (Co-investigator)
17. Investigating on the applicability of *Drosophila melanogaster* model for studying the effect of Cichorium intybus L hydroalcoholic extract on the kidney stones. Approved by TUMS and Nephrology Research Center (NRC), Project Number: 70059. (Co-investigator)
18. Investigation on *Spiroplasma's* male killing in *Phlebotomus papatasi* (Diptera: Psychodidae), zoonotic cutaneous leishmaniasis vector, in different regions of Iran, interactions between Wolbachia and *Spiroplasma* infection, and its in-vitro culture feasibility. Approved by TUMS, Project Number:69676. (Co-investigator)

19. Preparation of nanochitosan containing miltefosine and evaluation of its therapeutic effect on Leishmania major Iran strain MRHO/IR/75/ER in in-vitro and in-vivo conditions (BALB/c mice model). Approved by CREPI, Project Number:67174. (Co-investigator)
20. Coprological detection of prevalent zoonotic helminth parasites in wildlife (carnivores, herbivores) of Kermanshah Province in western Iran using parasitological and molecular methods. Approved by CREPI, Project Number: 66976. (Co-investigator)
21. Assessment of quantitative real-time PCR for the diagnosis of human amoebic keratitis. Approved by TUMS, Project Number:56036. (Co-investigator).

G: Professional experiences

Field activities: Mosquitoes, sandflies, flies, ticks

Expertise: Various Fields of Medical Entomology, Parasitology, Microbiology of Insect Vectors,
- Genetic Engineering,
- Gene silencing (RNA interference/ RNAi),
- Paratransgenesis,
- Cloning methods,
- PCR methods (PCR-RFLP, Nested-PCR, Multiplex-PCR, RT-PCR, Allel specific PCR),
- Real-Time PCR,
- NGS (Next Generation Sequencing),
- Cell culture methods & bioassay,
- Bacterial Culture methods,
- DNA/RNA extraction and purification,
- Gel Electrophoresis

Bioinformatics Software used in Molecular Analysis such as
- Alignment (ClustalW, Multiple Alignment…),
- Reverse complementary,
- Primers designing tools (Oligo, Gene runner, Primer3, Allelid…),
- Phylogeny Analysis (MEGA: Molecular Evolutionary Genetics Analysis, PAUP: Phylogenetic analysis using parsimony, Pop ART: Population Analysis with Reticulate Trees,…),
- NEB cutter,
- Sequence Analysis (BioEdit, Chromas, Bibi, Eztaxa …),
- BLAST (Basic Local Alignment Search Tool),
- Vector Nti,
- Cytoscape,
- Snap gene,
- Gene expression (REST),
- Prism-GraphPad,
- Dnasp

Medical diagnostic laboratory in different areas include Hematology (Cell counter machine, Preparation and staining of peripheral Blood Smears…), blood bank (ABO Blood Group, RH, and Cross-match…), Biochemistry (Auto analyzer machine…), Immunology and Hormonal studies (ELISA…), and Parasitology

Training Courses:

- PCR and troubleshooting, Real-time PCR, primer design, Cloning, gene expression, Virtual Cloning, Paratrangenesis, miRNA expression analysis, NGS, Pyrosequencing, Crisper /Cas9 gene editing, Principles of working with laboratory animals, etc.