



## Hamid Soraya

Nazlou Campus, Urmia University of Medical Sciences, Urmia, IRAN

[hamid\\_soraya2000@yahoo.com](mailto:hamid_soraya2000@yahoo.com); [soraya.h@umsu.ac.ir](mailto:soraya.h@umsu.ac.ir)

**Name:** Hamid

**Surname:** Soraya

**Gender:** Male

**Date of Birth:** 1982

**Marital Status:** Married

**Nationality:** Iranian

**Tel:** +98 4432754996 Ext-163

**Fax:** +98 4432754990

**Postal Code:** 57157-99313

### Achievements

---

- 1<sup>st</sup>rank in National Ph.D Entrance Exam in Iran, 2009.
- 1<sup>st</sup> rank in Board Exam, Department of Pharmacology, Faculty of Pharmacy, Tabriz University of Medical Sciences. Score 19.64 out of 20.
- Top Researcher (Dr. Giti prize) in 21<sup>st</sup> International Iranian Congress of Physiology and Pharmacology.
- The Active Researcher, Urmia University of Medical Sciences, 2014
- Top Researcher in West Azerbaijan Province, 2016

- Two grants awarded from the Ministry of Health and Medical Education of Iran

## Education

---

- 2012-2013 Research Fellow University of Alberta, Edmonton, Canada
- 2009-2013 Ph.D in Medical Pharmacology Tabriz University of Medical Sciences, Tabriz, Iran
- 2002-2008 Doctor of Vet Medicine (DVM) Urmia University, Urmia, Iran

## Employment and work experience

---

2017-present Director of the University Laboratory Animal Center

2015-present Chair of Pharmacology and Toxicology Department

2022-present Associate Professor Urmia University of Medical sciences, Urmia, Iran

2013-2022 Assistant Professor Urmia University of Medical sciences, Urmia, Iran

- Teaching Pharmacology to different disciplines including: *Medicine, Pharmacy, Dentistry, Nursing, Midwifery and Paramedical Students; Postgraduate nursing education such as intensive care and psychiatric nursing and also teaching specialized pharmacology to Ph.D students as well as residents such as cardiology.*

## Research Interests

---

- ✓ Myocardial ischemia/reperfusion injury
- ✓ Heart Failure
- ✓ Heart metabolism
- ✓ Ischemic pre and post-conditioning
- ✓ Cellular and Molecular Pharmacology
- ✓ Clinical pharmacology
- ✓ Fatty Liver
- ✓ Sepsis
- ✓ Cancer
- ✓ Neuropharmacology

## Skills & Technical Experiences

---

- ✓ Cardiac function and metabolism studies
- ✓ Working with power lab system and Millar Mikro-Tip catheter
- ✓ Isolated heart perfusion (in both langendorff and working mode)
- ✓ Working with laboratory animals
- ✓ Clinical pharmacology studies (cardiovascular and cancer)
- ✓ Western blot and protein analysis
- ✓ Elisa technique
- ✓ Real time PCR
- ✓ Angiogenesis studies
- ✓ Inflammation studies
- ✓ Histopathological studies
- ✓ Enzymatic assays
- ✓ Intracerebroventricular(*icv*) cannulation in rat
- ✓ **Induction of different animal models such as: MI, HF, Global ischemic stroke, Sepsis, Fatty liver, Cancer (colon and breast), Air pouch.**

## Publications

---

- 1- Maghsoudi S, Hosseini SA, **Soraya H**, Roosta Y, Mohammadzadeh A. Development of doxorubicin-encapsulated magnetic liposome@PEG for treatment of breast cancer in BALB/c mice. *Drug Deliv Transl Res*. 2023 May 3.
- 2- Vaez H, **Soraya H**, Garjani A, Gholikhani T. Toll-Like Receptor 4 (TLR4) and AMPK Relevance in Cardiovascular Disease. *Adv Pharm Bull*. 2023 Jan;13(1):36-47.
- 3- Babataheri S, Malekinejad H, Mosarrezai A, **Soraya H**. Pre-treatment or post-treatment with hydroxychloroquine demonstrates neuroprotective effects in cerebral ischemia/reperfusion. *Fundam Clin Pharmacol*. 2022 Nov 26.
- 4- Sadrhaghighi G, Abbaszadeh S, Garjani A, **Soraya H**. Effects of pre-treatment with metoprolol and diltiazem on cerebral ischemia/reperfusion induced injuries. *Brazilian Journal of Pharmaceutical Sciences*, 2022;58: e21086
- 5- Jannesar K, Eftekhari P, Pourjabali M, Masoudi N, **Soraya H**. Anti-tumor effect of memantine, an N-methyl-D-aspartate receptor antagonist, against DMH-induced colon cancer in rats. *Research in Pharmacy*, 2022, 26 (2):345-353.

- 6- Eftekhari P, Jannesar K, Pourjabali M, Seyfollah Rezaei, **Soraya H**, Masoudi N. Anti-Tumor Effect of the Ketogenic Diet against DMH-Induced Colon Cancer in Rats. MAEDICA – a Journal of Clinical Medicine. 2022; 17(4): 812-819
- 7- Jafari-Garageshlaghi F, Hashtarkhani F, **Soraya H**, Malekinejad H. Quercetin Protected from Aluminum Phosphide-induced Acute and Subacute Cardio- and Hepatotoxicity in Rats. Curr Pharm Des. 2022;28(43):3513-3524.
- 8- Jabbari N, Fegghi M, Esnaashari O, **Soraya H**, Rezaie J. Inhibitory effects of gallic acid on the activity of exosomal secretory pathway in breast cancer cell lines: A possible anticancer impact. Bioimpacts. 2022;12(6):549-559.
- 9- Mahboubi N, Shafiei-Irannejad V, Kahyaei\_aghdam M, **Soraya H**. Memantine enhances the cisplatin-induced apoptosis in A2780 ovarian cancer cells via CyclinD1 and hTERT inhibition. Process Biochemistry, 2022 (122): 69-75.
- 10- **Soraya H**, Sheikholeslami S, Shirpoor A, Nezami Majd F, Naderi R, Rasmi Y. Influence of Maternal Ethanol Exposure on Systemic Hemodynamic Variables and Histopathological Changes in the Aorta Wall of Male Rat Offspring: A Three-month Follow-up. Iran J Med Sci. 2022. 47(5):468-476.
- 11- Shafiei-Irannejad, V., Abbaszadeh, S., Janssen, P.M.L., **Soraya, H**. Memantine and its benefits for cancer, cardiovascular and neurological disorders. European Journal of Pharmacology, 2021, 910, 174455.
- 12- Khademvatan K, Gerami F, Abbaszadeh S, **Soraya H**. Influence of gender, age and diabetes in efficacy of nitroglycerin infusion in patients with hypertensive crisis. Iranian Journal of Pharmaceutical Sciences 2021: 17 (2): 105-116
- 13- Javidmehr, A., Abbaszadeh, S., Kian, M., Hamedeyazdan, S., **Soraya, H**. Hydroalcoholic extract of arum orientale ameliorates myocardial infarction induced by isoproterenol in rats. Journal of Research in Pharmacy, 2021, 25(1), pp. 80–88
- 14- **Soraya, H.**, Sani, N.A., Jabbari, N., Rezaie, J. Metformin Increases Exosome Biogenesis and Secretion in U87 MG Human Glioblastoma Cells: A Possible Mechanism of Therapeutic Resistance. Arch Med Res. 2021 Feb;52(2):151-162.
- 15- Soleimanipour S, Kian M, Hamedeyazdan S, Movahhedini N, Ghaderi F, **Soraya H**. Phytochemical and antibacterial screening of hydro-alcoholic extract of *Arum orientale* and its effects on CLP-induced sepsis in rats. Pharmaceutical Sciences, 2021, 27(2), pp. 162–169.

- 16- Azarbaijani M, Kian M, **Soraya H.** Anti-inflammatory effects of memantine in carrageenan-induced paw edema model in rats. *Journal of Reports in Pharmaceutical Sciences*, 2021, 10(1), pp. 60–65.
- 17- Salehi C, Seiiedy M, **Soraya H**, Fazli F, Ghasemnejad-Berenji M. Pretreatment with bisoprolol and vitamin E alone or in combination provides neuroprotection against cerebral ischemia/reperfusion injury in rats. *Naunyn-Schmiedeberg's Archives of Pharmacology*, 2021, 394(4), pp. 685–695
- 18- Salimi L, Akbari A, Jabbari N, Mojarad B, Vahhabi A, Szafert S, Kalashani SA, **Soraya H**, Nawaz M, Rezaie J. Synergies in exosomes and autophagy pathways for cellular homeostasis and metastasis of tumor cells. *Cell Biosci.* 2020 May 13;10:64.
- 19- Jannesar, K., Abbaszadeh, S., Malekinejad, H., **Soraya, H.** Cardioprotective effects of memantine in myocardial ischemia: Ex vivo and in vivo studies. *European Journal of Pharmacology*, 2020, 882, 173277
- 20- **Soraya H.** Prophylactic use of chloroquine may impair innate immune system response against SARS-Cov-2. *Pharmaceutical Sciences*, 2020, 26, pp. S78–S79
- 21- Khaleqsefat, E., Khalaj-Kondori, M., Bonyadi, M.J., **Soraya, H.**, Askari, B. The contribution of vkorc1 and cyp2c9 genetic polymorphisms and patients' demographic characteristics with warfarin maintenance doses: A suggested warfarin dosing algorithm. *Iranian Journal of Pharmaceutical Research*, 2020, 19(3), pp. 77–85.
- 22- Sameei, S., **Soraya, H.**, Ghasemnejad-Berenji, M. A novel effect of acyclovir on hair growth in BALB/c mice: a promising future for finding a new topical drug for the treatment of hirsutism. *Clinical, Cosmetic and Investigational Dermatology*. 2020; 13:319-324.
- 23- Abbaszadeh S, Garjani A, Nazemiyeh H, Ayadi S, **Soraya H.** Hydroalcoholic extract from rhizomes of *Cynodon dactylon* improve hemodynamic and electrocardiogram parameters in myocardial infarction in rats. *Pharmaceutical Sciences*. 2019;25(3): 198-204.
- 24- Zirak Javanmard M, Rahnavard M, **Soraya H**, Karimipour M. Curcumin Improves the Efficacy of BMSCs in Myocardial Ischemia Injury in Rat. *Iranian Red Crescent Medical Journal*: 2019;21(9):e86592
- 25- Askari, B., **Soraya, H.**, Ayremlu, N., Golmohammadi M. Short-term outcomes after surgical versus trans catheter closure of atrial septal defects; a study from Iran. *Egyptian Heart Journal*. 2018 Dec;70(4):249-253.

- 26- Abbaszadeh S, Javidmehr A, Askari B, Janssen PML, **Soraya H**. Memantine, an NMDA receptor antagonist, attenuates cardiac remodeling, lipid peroxidation and neutrophil recruitment in heart failure: a cardioprotective agent? *Biomedicine and Pharmacotherapy*. 2018 108:1237–1243
- 27- Shojaei Zarghani S, Abbaszadeh S, Alizadeh M, Rameshrad M, Garjani A, **Soraya H**. The Effect of Metformin Combined with Calcium-Vitamin D<sub>3</sub> Against Diet-Induced Nonalcoholic Fatty Liver Disease. *Advanced Pharmaceutical Bulletin*. 2018 Mar;8(1):97-105.
- 28- Shojaei Zarghani S, **Soraya H**, Alizadeh M. Calcium and vitamin D3 combinations improve fatty liver disease through AMPK-independent mechanisms. *European Journal of Nutrition*, 2018,57(2):731-740.
- 29- Karimipour M, Shojaei Zarghani S, Mohajer Milani M, **Soraya H**. Pre-Treatment with Metformin in Comparison with Post-Treatment Reduces Cerebral Ischemia Reperfusion Induced Injuries in Rats. *Bulletin of Emergency and Trauma*. 2018;6(2):115-121.
- 30- Askari B, Khaleqsefat E, Khalafkhani D, Khalaj-Kondori M, Khademvatan K, **Soraya H**. Study on a novel polymorphism in the VKORC1 promoter region using bioinformatic tools and warfarin dosing data. *Thrombosis Research*. 2017; 158:76-78.
- 31- Shojaei Zarghani S, **Soraya H**, Zarei L, Alizadeh M. Comparison of Three Different Diet-Induced Non Alcoholic Fatty Liver Disease Protocols in Rats: A Pilot Study. *Pharmaceutical Sciences*.2016, 22:9-15.
- 32- Rameshrad M, **Soraya H**, Maleki Dizaji N, Vaez H, Garjani A. A-769662, a direct AMPK activator, attenuates lipopolysaccharide-induced acute heart and lung inflammation in rats. *Molecular Medicine Reports*, 2016,13:2843-9.
- 33- **Soraya H**, G. T. Masoud W, Gandhi M, Garjani A, Clanachan AS. Myocardial mechanical dysfunction following endotoxemia: role of changes in energy substrate metabolism. *Basic Research in Cardiology*, 2016,111:24.
- 34- Rameshrad M, Maleki-Dizaji N, **Soraya H**, Toutouchi N.S, Barzegari A, Garjani A. Effect of A-769662, a direct AMPK activator, on Tlr-4 expression and activity in mice heart tissue. *Iranian Journal of Basic Medical Sciences*, 2016, 19: 1308-1317.
- 35- Mokarizadeh A, Esmaeili P, **Soraya H**, Hassanzadeh K, Jalili A, Abdi M, Faryabi MR. Antibody against a-gliadin 33-mer peptide: Is the key initiating factor for development of multiple sclerosis during gluten sensitivity? *Journal of Medical Hypotheses and Ideas*, 2015, 9, 38–44.

- 36- Mokarizadeh A, Hassanzadeh K, Abdi M, **Soraya H**, Faryabi MR, Mohammadi E, Ahmadi A. Transdermal delivery of bovine milk vesicles in patients with multiple sclerosis: A novel strategy to induce MOG-specific tolerance. *Medical Hypotheses*, 2015 ;85(2):141-4.
- 37- **Soraya H**, Moloudizargari M, Aghajanshakeri SH, Javaherypour S, Mokarizadeh A, Hamedeyazdan S, Esmaeli Gouvarchin Ghaleh H, Mikaili P, Garjani A. Angiogenic effect of the aqueous extract of *Cynodon dactylon* on human umbilical vein endothelial cells and granulation tissue in rat, *DARU Journal of Pharmaceutical Sciences*, 2015, 23:10
- 38- **Soraya H**, Rameshrad M, Mokarizadeh A, Garjani A. Metformin attenuates myocardial remodeling and neutrophil recruitment after myocardial infarction in rats, *Bioimpacts*, 2015, 5(1), 3-8.
- 39- **Soraya H**, Clanachan AS, Rameshrad M, Garjani A. Chronic metformin treatment suppresses TLR signaling and inflammatory markers and attenuates MI-induced left ventricular dysfunction. *European Journal of Pharmacology*, 2014, 737, 77–84.
- 40- Yousefi K, Fathiazad F, **Soraya H**, Rameshrad M, Maleki-Dizaji N, Garjani A. *Marrubium vulgare* L. methanolic extract inhibits inflammatory response and prevents cardiomyocyte fibrosis in isoproterenol-induced acute myocardial infarction in rats. *BiolImpacts*, 2014, 4(1), 21-27
- 41- Yousefi K, **Soraya H**, Fathiazad F, Khorrami A, Hamedeyazdan S, Maleki-Dizaji N, Garjani A. Cardioprotective effect of methanolic extract of *Marrubium vulgare* L. on isoproterenol-induced acute myocardial infarction in rats. *Indian Journal of Experimental Biology*, 2013, 51(8): p:653-660.
- 42- **Soraya H**, Khorrami A, Garjani A, Maleki-Dizaji N, Garjani A. Acute treatment with metformin improves cardiac function following isoproterenol induced myocardial infarction in rats. *Pharmacological Reports*, 2012, 64(6): p:1476-1484.
- 43- **Soraya H**, Farajnia S, khani S, Rameshrad M, Khorrami A, Banani A, Maleki-Dizaji N, Garjani A. Short-term treatment with metformin suppresses toll like receptors (TLRs) activity in isoproterenol-induced myocardial infarction in rat: Are AMPK and TLRs connected?. *International Immunopharmacology*; 2012, 14(4): p:785–791.
- 44- Fathiazad F, Matlobi A, Khorrami A, Hamedeyazdan S, **Soraya H**, Hammami M, Maleki-Dizaji N, Garjani A. Phytochemical screening and evaluation of cardioprotective activity of ethanolic extract of *Ocimum basilicum* L. (basil) against isoproterenol induced myocardial infarction in rats. *DARU Journal of Pharmaceutical Sciences*, 2012, 20:87.

- 45- Banani A, Maleki-Dizaji N, Garjani A, **Soraya H**, Mostafalou S, Ziaee M. Clavulanic acid exhibits anti-inflammatory effects on carrageenan-induced paw edema model of inflammation in rats. *Annals of Biological Research*, 2012, 3(7): p:3312-3320.
- 46- Garjani A, Rezazadeh H, Andalib S, Ziaee M, Doustar Y, **Soraya H**, Garjani M, Khorrami A, Asadpoor M, Maleki-Dizaji N. Ambivalent Effects of Atorvastatin on Angiogenesis, Epidermal Cell Proliferation and Tumorigenesis in Animal Models. *Iranian Biomedical Journal*, 2012, 16(2): p:59-67.
- 47- **Soraya H**, Esfahanian N, Shakiba Y, Ghazi-Khansari M, Nikbin B, Hafezzadeh H, Garjani A. Anti-angiogenic effects of metformin, an AMPK activator, on human umbilical vein endothelial cells and on granulation tissue in rat. *Iranian Journal of Basic Medical Sciences*, 2011, 15(6): p: 10202-10209.
- 48- Esfahanian N, Shakiba Y, Nikbin B, **Soraya H**, Maleki-Dizaji N, Ghazi-Khansari M, Garjani A. Effect of metformin on the proliferation, migration and MMP-2 and -9 expression of human umbilical vein endothelial cells (HUVECs). *Molecular Medicine Reports*. 2012, 5(4): p:1068-74.
- 49- Hafezzadeh H, **Soraya H**, Banani A, Adibpour M, Maleki-Dizaji N, Garjani A. The effect of metformin on neutrophil recruitment in Carrageenan-Induced peritonitis in mice. *Pharmaceutical Sciences*, 2012, 17(4): p: 209-218.
- 50- Garjani A, Andalib A, Biabani S, **Soraya H**, Doustar Y, Garjani A, Maleki-Dizaji N. Combined atorvastatin and coenzyme Q10 improve the left ventricular function in isoproterenol-induced heart failure in rat. *European Journal of Pharmacology*, 2011, 666(1-3): P:135-141.
- 51- Tamaddonfard E, **Soraya H**, Hamzeh-Gooshchi N. Central interaction between physostigmine and histamine during yawning in rats. *Pharmacological Reports*, 2008, 60: p: 896–903.

### Some selected presentations

---

- 1- **Hamid Soraya**. Memantine and its benefits for cardiovascular diseases. International Congress on Advanced Cardiology and Cardiovascular Research, March 2022, Paris, France
- 2- **Hamid Soraya**. Cardioprotection: new therapeutic targets and mediators. 24<sup>th</sup> Iranain Congress of Physiology and Pharmacology, October 2019, Tehran, Iran.



- 3- **Hamid Soraya**, Samin Abbaszadeh, Asal Javidmehr, The effects of memantine on heart failure: Is memantine cardioprotective?. 23<sup>th</sup> Iranain Congress of Physiology and Pharmacology February 2018, Chabahar, Iran.
- 4- **Hamid Soraya**, Alireza Garjani. Angiogenic effect of the aqueous extract of *Cynodon dactylon* on human umbilical vein endothelial cells and granulation tissue in rat. 7<sup>th</sup> International Conference on Drug Discovery and Therapy. February 2016, Dubai. UAE.
- 5- Maryam Rameshrad, Alireza Garjani, Nasrin Maleki-Dizaji, **Hamid Soraya**, Haleh Vaez. Activation of AMPK by A769662 attenuates LPS induced activation of neutrophils in lung in rat. *Fourth International Meeting on Pharmacy & Pharmaceutical Sciences*, September 2014, Istanbul, Turkey.
- 6- Maryam Rameshrad, Alireza Garjani, Nasrin Maleki-Dizaji, Haleh Vaez, **Hamid Soraya**, Ailar Nakhband. Endotoxin treatment in isolated rat heart: TNF- $\alpha$  rise due to activation of MYD88. *Fourth International Meeting on Pharmacy & Pharmaceutical Sciences*, September 2014, Istanbul, Turkey
- 7- **Soraya H**, Mekarizadeh A. Metformin attenuates angiogenesis and neutrophil recruitment in air pouch model in rats. *12th International Congress of Immunology and Allergy of Iran*; 2014, Tehran, Iran.
- 8- **Hamid Soraya**, Maryam Rameshrad, Alireza Garjani. Metformin attenuates toll like receptor 4 activity and expression in infarcted myocardium: A role for AMPK. *Oral presentation in: 21th Iranian Congress of Physiology and Pharmacology*; August 2013, Tabriz, Iran.
- 9- Alireza Garjani, **Hamid Soraya**, Safar Farajnia, Maryam Rameshrad, Arash Khorrami, Banani Armita, Nasrin Maleki-Dizaji. The possible connection between AMP-activated protein kinase (AMPK) and toll-like receptors (TLRs) in myocardial infarction. *Oral presentation in 13th Iranian Pharmaceutical Sciences Congress*. 3-6 September 2012. Isfahan, Iran
- 10- Maryam Rameshrad, Keyvan Yousefi, Fatemeh Fathiazad, **Hamid Soraya**, Sanaz Hamedeyazdan, Arash Khorrami, Nasrin Maleki-Dizaji, Alireza Garjani. A methanolic extract of *Marrubium vulgare L.* suppresses inflammatory responses in isoproterenol induced myocardial infarction in rat. *Oral presentation in 13th Iranian Pharmaceutical Sciences Congress*. 3-6 September 2012. Isfahan, Iran
- 11- Yousefi K, **Soraya H**, Fathiazad F, Hodaei D, Rameshrad M, Maleki-Dizaji N, Garjani A. Cardioprotective effect of methanolic extract of *Marrubium vulgare L.* on isoproterenol-

induced acute myocardial infarction in rats. *13th Congress of the International Society for Ethnopharmacology*. Graz, Austria September 2 - 6, 2012.

12- Hodaie D, Yousefi K, **Soraya H**, Fathiazad F, Hamedeyazdan S, Maleki-Dizaji N, Garjani A. Digitally Enhanced Thin-Layer Chromatography and evaluation of in vivo and in vitro antioxidant activity of Marrubium vulgare L. *13th Congress of the International Society for Ethnopharmacology*. Graz, Austria September 2 - 6, 2012.

13- A Garjani, **H Soraya**, S Farajnia, M Rameshrad, A Khorrami, A Banani, N Maleki-Dizaji. Activation of AMPK by metformin protects infarcted myocardium through suppression of 7 toll like receptor activity. *Oral presentation in 6th European Pharmacology Congress*, Granada, Spain, 17-20 July 2012.

14- **Hamid Soraya**, Nilufar Esfahanian, Yadollah Shakiba, Mahmood Ghazi-Khansari, Behroz Nikbin, Hassan Hafezzadeh, Alireza Garjani. Anti-angiogenic effects of metformin, an AMPK activator, in human umbilical vein endothelial cell and granulation tissue in rat. *Oral presentation in: 20th Iranian Congress of Physiology and Pharmacology*; October 2011, Hammadan, Iran

15- Alireza Garjani, **Hamid Soraya**, Safar Farajnia. The Role of Adenosine Monophosphate-Activated Protein Kinase (AMPK) In Cardioprotection. *Oral presentation in: 20th Iranian Congress of Physiology and Pharmacology*; October 2011, Hammadan, Iran.

16- Hassan Hafezzadeh, **Hamid Soraya**, Armita Banani, Mohammad Adibpour, Nasrin Maleki-Dizaji, Alireza Garjani. The effect of metformin on neutrophil recruitment in Carrageenan-Induced peritonitis in mice. *20th Iranian Congress of Physiology and Pharmacology*; October 2011, Hammadan, Iran

## Summary of workshops and certificates

---

- ✓ Certificate of Training in Radiation Safety: University of Alberta Personnel
- ✓ Certificate of UAPWC Institutional Animal User Training Program-PartII: The care and use of the rat in research (University of Alberta)
- ✓ CCAC Mandatory Training Requirements for Animal Users-Part I: Core Stream & Animal Housed in Vivaria (University of Alberta)
- ✓ Educational skills course consisting: Educational planning, Teaching and learning principles and Methods, student Assessment, and Conceptual Learning workshops.
- ✓ Workshop of power lab including recording human pulse and ECG and measuring blood pressure in rat (as a lecturer).

- ✓ National workshop of Isolated heart perfusion (as a lecturer)
- ✓ Workshops of statistics and statistical softwares level A and level B
- ✓ Workshop of preliminary research methods
- ✓ Workshop of monoclonal antibody production.