



## **CURRICULUM VITAE Leila Nematollahi**

**Born in September 20<sup>th</sup> 1977**

### **Current position:**

Associate Professor  
Department of Medical Biotechnology, Biotechnology Research Center  
Pasteur Institute of Iran  
Tel: +98(21)66953311-20, Fax: +98(21)66480780  
E-mail address: [nematollahi@pasteur.ac.ir](mailto:nematollahi@pasteur.ac.ir), [leila\\_nematollahi@yahoo.com](mailto:leila_nematollahi@yahoo.com)

### **Education**

Ph.D. “Pharmaceutical Biotechnology”; Pasteur Institute of Iran, 2006-2012.  
Pharm.D.; Pharmacy School, Tehran University of Medical Science, 1996-2002.  
Science Diploma , Farzanegan high school, 1991-1995.

### **Honors**

Selected as top student in Pasteur Institute of Iran, research day ceremony, 2010  
Top student in Farzanegan high school, 1995.

### **Pharm. D. Thesis**

**Title:** Application of a high performance liquid chromatography (HPLC) method to the analysis of Thiamine, Riboflavin and Niacin in Iranian pasta.

**Supervisors:** Dr.M. Hajimahmoodi, Dr. B.Jannat.

### **Ph. D. Thesis**

**Title:** Expression of a novel human BMP-7 variant with enriched heparin binding site in Chinese hamster ovary (CHO) cells and evaluation of its biological activity.

**Supervisors:** Dr. F.Mahboudi, Dr.V.Khalaj.

## **Publications**

1. Optimization of the Expression of Recombinant Cetuximab Single-Chain Fragment Variable and Comparative its Purification with Magnetic Nanoparticles and Conventional Fast Protein Liquid Chromatography. Jalalvand M , Falahzadeh kh , Jalalvand A , Mazlumi M , Bakhshandeh H , Shahsavari G , Bayat E , Veisi Malekshahi Z , **Nematollahi L**, Negahdari B. *Biointerface Research in Applied Chemistry*; 2023; 13(6): 592.
2. Recombinant anti-human epidermal growth factor receptor type 2 single-chain variable fragment-alpha-luffin fusion protein as a putative immunotoxin against human epidermal growth factor receptor type 2-positive breast cancer cells: an experimental research. Damough S, Bayat E, Bakhshaiesh TO, Barkhordari F, Esmacili R, **Nematollahi L**, Talebkhan Y. *Annals of Medicine & Surgery*; 2023 ; 85 (9): 4348-4354.
3. Expression, Purification, and Biological Evaluation of XTEN-GCSF in a Neutropenic Rat Model. Nikravesh FY, Gholami P, Bayat E, Talebkhan Y, Mirabzadeh E, Damough S, Aghamirza Moghim Aliabadi H, **Nematollahi L**, Hosseinzadeh Ardakani Y. *Applied Biochemistry and Biotechnology*; 2023.
4. Identification of two neutralizing human single-chain variable fragment antibodies targeting *Staphylococcus aureus* alpha-hemolysin. Piri-Gavgani S, Ghanei M, Fateh A, Siadat D, **Nematollahi L**, Rahimi-Jamnani F. *Iranian Journal of Basic Medical Sciences*; 2022 ; 25 (10): 1207–1214.
5. Computational analysis of fusion protein of anti-HER2 scFv and alpha luffin: A new immunotoxin protein for HER2 positive cancers. Barkhordari F, Rismani E, Tabasinezhad M, Asgari S, **Nematollahi L**, Talebkhan Y. *Brazilian Journal of Pharmaceutical Sciences*; 2022; 58:1-12.

6. Extension of human GCSF serum half-life by the fusion of albumin binding domain. Nikravesht FY, Shirkhani S, Bayat E, Talebkhan Y, Mirabzadeh E, Sabzalinejad M, Aliabadi HAM, **Nematollahi L**, Ardakani YH, Sardari S. *Sci Rep*; 2022; 12 (1):667.
7. Production of an Antibody Fragment (scFv) Targeting PcrV Protein of Pseudomonas aeruginosa in Fed-Batch Cultivation Mode. Karam S, Raigani M, Hassani Afshar S, Talebkhan Y, Bayat E, Komijani S, **Nematollahi L**, Barkhordari F, Shafiee Ardestani M, Davami F. *IBJ*; 2021; 25 (6): 390-398.
8. Production of soluble and functional anti-TNF- $\alpha$  Fab' fragment in cytoplasm of E. coli: Investigating the effect of process conditions on cellular biomass and protein yield using response surface methodology. Talaei A, Mazaheri S, Bayat E, Bakhshandeh B, Sabzalinejad M, Damough Sh, Mahboudi F, **Nematollahi L**, Talebkhan Y. *Protein J*; 2021; 40 (5): 786-798.
9. Characterization of a novel mCH3 conjugated anti-PcrV molecule. Komijani S, Bayat E, Rismani E, Hosseini S, Moazzami R, **Nematollahi L**, Sardari S, Talebkhan Y, Davami F, Barkhordari F, Hosseini F, Jahandar H. *Sci Rep*; 2021; 11: 7154.
10. Optimization of culture conditions for high-level expression of soluble and active tumor necrosis factor- $\alpha$  in E. coli. Damough Sh, Sabzalinezhad M, Talebkhan Y, **Nematollahi L**, Bayat E, Torkashvand F, Adeli A, Jahandar H, Barkhordari F, Mahboudi F. *Protein Expr Purif*; 2021; 179 (105805); 1-8.
11. Multilayer Alginate Microcapsules For Live Cell Microencapsulation; Is There Any Preference For Selecting Cationic Polymers? Fariba Hajifathaliha, Arash Mahboubi, Noushin Bolourchian, Elham Mohit and **Leila Nematollahi**, Iranian Journal of Pharmaceutical Research; 2021; 20 (2): 173-182.
12. Woodchuck Hepatitis Virus Post-Transcriptional Regulation Element (WPRE) Promotes Anti-CD19 BiTE Expression in Expi293 Cells, Reza Moazzami, Hasan Mirzahoseini, **Leila Nematollahi**, Farzaneh Barkhordari, Mozhgan Raigani, Fatemeh Hajari Taheri, Fereidoun Mahboudi and Fatemeh Davami, Iranian Biomedical Journal; 2021; 25 (4): 275-283.
13. Different Respiratory Samples for COVID-19 Detection by Standard and Direct Quantitative RT-PCR: A Literature Review, Maryam Ahmadzadeh , Hossein Vahidi, Arash Mahboubi, Fariba Hajifathaliha, **Leila Nematollahi** and Elham Mohit, Iranian Journal of Pharmaceutical Research ;2021; 20 (3): 285-299.

14. Production of an Antibody Fragment (scFv) Targeting PcrV Protein of *Pseudomonas aeruginosa* in Fed-Batch Cultivation Mode. Saba Karam, Mozghan Raigani, Sahar Hassani Afshar, Yeganeh Talebkhan, Elham Bayat, Samira Komijani, **Leila Nematollahi**, Farzaneh Barkhordari, Mehdi Shafiee Ardestani and Fatemeh Davami, Iranian Biomedical Journal ;2021;25 (6): 390-398.
15. Computational analysis of fusion protein of anti-HER2 scFv and alpha luffin: A new immunotoxin protein for HER2 positive cancers. Barkhordari F, Rismani E, Tabasinezhad M, Asgari S, **Nematollahi L**, Talebkhan Y. *Braz J Pharm Sci*; 2020; Accepted.
16. Improvement of Certolizumab Fab' properties by PASylation technology. Mazaheri S, Talebkhan Y, Mahboudi F, **Nematollahi L**, Ahangari Cohan R, Mirabzadeh Ardakani E, Bayat E, Sabzalinejad M, Sardari S, Torkashvand F. *Sci Rep*; 2020; 10 (1):18464.
17. Comparison of Linear Poly Ethylene Imine (LPEI) and Poly L-Lysine (PLL) in Fabrication of CHOK<sub>1</sub> Cell-Loaded Multilayer Alginate. Fariba Hajifathaliha, Arash Mahboubi, Elham Mohit, Noushin Bolourchian, Vahid Khalaj, **Leila Nematollahi**, *Advanced Pharmaceutical Bulletin* ;2020; 10(2): 290-296.
18. Comparison of different cationic polymers efficacy in fabrication of alginate multilayer microcapsules. Fariba Hajifathaliha, Arash Mahboubi, **Leila Nematollahi**, Elham Mohit, Noushin Bolourchian, Asian Journal of Pharmaceutical Sciences ;2020; 15: 95-103.
19. Optimization of HER2-based and cell-based ELISA for detection of trastuzumab biosimilar, Maryam Ahmadzadeh, Farzaneh Farhadi , **Leila Nematollahi**, Shayan Maleknia, Elham Mohit, koomesh journal; 2020; 22( 2) :341- 350.
20. Cloning and soluble expression of mature  $\alpha$ -luffin from *Luffa cylindrica* in *E. coli* using SUMO fusion protein, Shaghayegh Namvar , Farzaneh Barkhordari , Mozghan Raigani , Hoda Jahandar, **Leila Nematollahi** ,Fatemeh Davami . Turkish Journal of Biology ;2018;42 (1): 23-32.
21. Effects of peptone supplementation in different culture media on growth, metabolic pathway and productivity of CHO DG44 cells; a new insight into amino acid profiles, Davami Fatemeh, Eghbaltpour Farnaz, **Nematollahi Leila**, Barkhordari Farzaneh, Mahboudi Fereidoun . Iranian Biomedical Journal;2015; 19 (4):194-205.

22. Effect of cysteamine on cell growth and IgG4 production in recombinant Sp2.0 cells.  
Jahandar H, Vaziri B, **Nematollahi L**, Afsharirad T, Torkashvand F, Khalaj V.  
Iranian Journal of Pharmaceutical Research; 2015; 14(1):177-87.
23. The Effects of Recombinant IgG4 Expression on the Growth of Sp2.0 Cell Lines,  
Authors: Hoda Jahandar, Vahid Khalaj, **Leila Nematollahi**, Fatemeh Zandi, Somayeh  
Enayati, Behrouz Vaziri, Modares Journal of Medical Sciences: Pathobiology ;2014;  
16(4): 27-37.
24. Enhancement of Recombinant Human Tissue Plasminogen Activator Expression in  
CHO Cells using Matrix Attachment Region Containing Vectors in Combination with  
Promoter Activation Strategy, Authors: Azam Rahimpour, Behrouz Vaziri, Farzaneh  
Barkhordari, **Leila Nematollahi**, Ahmad Adeli, Fereidoun Mahboudi, Modares  
Journal of Medical Sciences: Pathobiology;2013; 16(1): 11-21.
25. Engineering the Cellular Protein Secretory Pathway for Enhancement of  
Recombinant Tissue Plasminogen Activator Expression in Chinese Hamster Ovary  
cells: Effects of CERT and XBP1s Genes, Authors: Rahimpour A, Vaziri B,  
Moazzami R, **Nematollahi L**, Barkhordari F, Kokabee L, Adeli A, Mahboudi F, J  
Microbiol Biotechnol;2013; 23(7): 1116-1122.
26. A novel human Bone Morphogenetic Protein-7 variant with enriched heparin-binding  
site, Authors: **Leila Nematollahi**, Fereidoun Mahboudi, Azam Rahimpour, Hoda  
Jahandar, and Vahid Khalaj, Molecular Biology; 2013; 47(3): 399-405.
27. The comparison of Bone Morphogenetic Protein-7 mutant expression in the  
prokaryotic and eukaryotic hosts, Authors: **Leila Nematollahi**, Fereidoun Mahboudi,  
Mohammad Azizi, Farzaneh Barkhordari, Ahmad Adeli, and Vahid Khalaj, Modares  
Journal of Medical Sciences: Pathobiology;2012; 15(3): 93-102.
28. Periplasmic Expression of a Novel Human Bone Morphogenetic Protein-7 Mutant in  
Escherichia coli , Authors: **Leila Nematollahi** , Vahid Khalaj , Seyedeh Maliheh  
Babazadeh, Azam Rahimpour, Hoda Jahandar, Fatemeh Davami , and Fereidoun  
Mahboudi , Avicenna J Medical Biotechnology;2012; 4(4): 178–185.

## **Projects**

1. Preparation and characterization of niosomal nano-carriers containing Oxaliplatin targeted by Cetuximab derived scFv and evaluation of their in vitro cytotoxicity on human colorectal cancer cell line. (Co-funded by: Pasteur Institute of Iran, Tehran, Iran & Tehran University of Medical Sciences, 2021).
2. Expression and characterization of single chain antibody fragments against TNF- $\alpha$  and IL-6 receptor alone and together as bispecific antibody in *E. coli*. (Funded by: Pasteur Institute of Iran, Tehran, Iran, 2021).
3. Expression and characterization of single chain antibody fragments against TNF- $\alpha$  and IL-6 receptor alone and together as bispecific antibody in mammalian expression system. (Funded by: Pasteur Institute of Iran, Tehran, Iran, 2021).
4. Expression of  $\alpha$ -luffin immunotoxin conjugated to anti-HER2 scFv in *E. coli* cell and study of its inhibitory effects on breast cancer cell lines (Co-Funded by: Pasteur Institute of Iran, Tehran, Iran (2017) & Iran National Science Foundation, 2018).
5. Site-specific integration of GFP reporter gene in CHO cells mediated by CRISPR/Cas9 system. (Funded by: Pasteur Institute of Iran, Tehran, Iran, 2018).
6. Production of an Antibody fragment (V2L2) with improved half-life against PcrV protein of *Pseudomonas aeruginosa* in mammalian HEK and prokaryotic *E. coli* host. (Funded by: Pasteur Institute of Iran, Tehran, Iran, 2016).
7. Efficacy comparison of different cationic polymers in production of multilayer alginate microcapsules. (Funded by: Shahid Beheshti University of Medical Sciences Tehran, Iran, 2016).
8. Construction a recombinant expressing vector containing single chain variable fragment (scFv) against HER2 linked to IFN-gamma inducible protein of 10 kDa (IP-10) chemokine. (Funded by: Shahid Beheshti University of Medical Sciences Tehran, Iran, 2016).
9. Tracking intercellular mechanisms involved in solubility increase of anti-VEGF Fab Fragment expressed in a fed-batch cultivation mode in *E. coli*. (Funded by: Pasteur Institute of Iran, Tehran, Iran, 2015).

10. Construction of an expression vector encoding single chain variable fragment (scFv) against Human Epidermal Growth receptor 2 (HER2). (Funded by: Protein technology research center, Shahid Beheshti University of Medical Sciences Tehran, Iran, 2015).

11. Expression and purification of single chain variable fragment (scFv) against (Human Epidermal Growth 2 receptor (HER2), (Funded by: Shahid Beheshti University of Medical Sciences Tehran, Iran, 2015).

12. Expression of hBMP-7 (Human Bone Morphogenetic Protein-7) in E.coli using SUMO fusion protein and evaluation of its biological activity, (Funded by: Pasteur Institute of Iran, Tehran, Iran, 2014).

13. Cloning of estrogen receptor alpha (ER $\alpha$ ) in GFP containing plasmid and evaluation of its expression in COS-7 cells, (Funded by: Faculty of pharmacy, Shahid Beheshti University of Medical Sciences, 2014).

14. Periplasmic expression of a novel human BMP-7 mutant in Escherichia coli, (Funded by: Pasteur Institute of Iran, Tehran, Iran, 2010).

15. Transient and stable expression of a novel human BMP-7 variant in Sp2/0 cell lines, (Funded by: Pasteur Institute of Iran, Tehran, Iran, 2009).

➤ **National grants:**

1. Development of SP2/0 stable mammalian cell line producing biosimilar Golimumab anti-TNF alpha monoclonal antibody.
2. Development of engineered E. coli cells producing Fab antibody fragment of Certolizumab pegol.

*(Funded by: Technological development department of presidential office, Tehran, Iran, 2016)*

**Published Book:**

- Monoclonal Antibodies: a novel challenge in the field of Biotechnology  
Authors: Dr.F.Davami, A.Rahimipour, **Dr. L.Nematollahi**, Dr.H.Jahandar, 2012.

**Patent:**

- Design and expression of a novel human Bone Morphogenetic Protein-7 variant with enriched heparin affinity in CHO cells, **patent No: 86057, 2015.**

**Ph.D thesis supervisor:**

- Preparation and characterization of niosomal nanocarriers containing Oxaliplatin targeted by Cetuximab derived scFv and evaluation of their in vitro cytotoxicity on human colorectal cancer cell line
- Fabrication of different alginate-based polyelectrolyte complexes (PECs) and evaluation of their characteristics in cell microencapsulation
- Identification and characterization of Fully Human scFv Antibody Inhibiting *Staphylococcus aureus* Alpha-Hemolysin
- Expression of PASylated form of anti-tumor necrosis factor alpha Fab' antibody fragment and evaluation of its physicochemical and biological properties.

**Master thesis supervisor:**

- Preparation and characterization of polysaccharide nanoparticles containing recombinant alpha luffin and its effect on breast cancer cell line
- Expression of hBMP-7 (Human Bone Morphogenetic Protein-7) in *E.coli* using SUMO fusion protein and evaluation of its biological activity.
- Cloning and Expression of hBMP-7 (Human Bone Morphogenetic Protein-7) in Shuffle: a novel *E. coli* protein expression strain.
- Cloning and expression of an Antibody fragment (V2L2) with improved half-life against PcrV protein of *Pseudomonas aeruginosa* in prokaryotic *E. coli* host.
- Cloning and comparison expression of a humanized anti-TNF- $\alpha$  antibody fab fragment (Certolizumab) in *E.Coli* hosts

**Ph.D thesis advisor:**

- Synthesis of Oxaliplatin-PEG-PLGA nanopolymer particles incorporated with Cetuximab monoclonal antibody derived scFv against epidermal growth factor



receptor (EGFR) and evaluation of its *in vitro* cytotoxicity on human colorectal cancer cell line.

- Expression of an CD3/CD19 bispecific antibody in HEK 293 cell line and evaluation of the effect of WPRE element on expression level.
- Expression of a fusion protein containing scFv against HER2 linked to IP-10 and *in vitro* evaluation of its biological activity
- Optimization of expression and pharmacokinetic and pharmacodynamic studies of fusion derivatives of GCSF proteins in a Rat model

#### **Pharm.D & Master thesis advisor:**

- Production of an Antibody fragment (V2L2) with improved half-life against PcrV protein of *Pseudomonas aeruginosa* in prokaryotic *E. coli* host by using SUMO-tag in fed-batch cultivation system mode.
- Production of an antibody fragment (ScFV) against amyloid-beta for Alzheimer's disease in prokaryotic *E.coli* host by using SUMO-tag in fed batch cultivation system mode.
- Cloning and soluble expression of mature  $\alpha$ -luffin from *Luffa cylindrica* in *E.coli* using SUMO fusion protein and rehamnose tunable promoter system.
- Construction of recombinant plasmid encoding estrogen receptor alpha (ER $\alpha$ ) and evaluation of its expression in COS-7 cells

#### **Teaching Experiences**

**(2017-until now) " Novel Drug Delivery"** for Ph.D students of Medical Biotechnology (Pasteur Institute of Iran)

**(2016-until now) " Cell Biology "** for Ph.D students of Medical Biotechnology and Pharmaceutical Biotechnology (Pasteur Institute of Iran)

**(2015-until now) " Protein Chemistry"** for Ph.D students of Pharmaceutical Biotechnology (Pasteur Institute of Iran)

(2015-until now) "protein engineering" for Ph.D students of Medical Biotechnology (Pasteur Institute of Iran)

(2014-until now) "Advanced genetic engineering" for Ph.D students of Pharmaceutical Biotechnology (Pasteur Institute of Iran)

(2018) "Introduction to Biotechnology" for Master students of Pharmaceutical Chemistry, Islamic Azad University

(2003-2005) "Workshop on Rational Drug Use" for Medical Students:

- Tehran University of Medical Sciences & Health Services
- Iran University of Medical Sciences & Health Services
- Birjand University of Medical Sciences & Health Services
- Ardabil University of Medical Sciences & Health Services

(1996-1999) "Chemistry" for the university entrance exam

**Professional experiences:**

- Stable and Transient Expression in mammalian cells (CHO, Sp2/0)
- Expression in prokaryote systems (*E.coli*)
- Cloning
- Expert in Cell culture techniques
- Purification of Recombinant Proteins

**Congress Presentations:**

- Comparison of linear poly ethylene imine (LPEI) and poly l-lysine (PLL) in fabrication of CHOK1 cell-loaded multilayer alginate microcapsules . **18th Annual Congress on Pharmaceutics & Drug Delivery Systems**. 2019. Amsterdam, Netherlands.
- Preparation and Characterization of Different Multilayer Alginate Microcapsules. **Pharmacy Updates**, Shahid Beheshti University of Medical Sciences. 2018.Iran.
- Cloning and expression of V2L2 antibody fragment against *Pseudomonas aeruginosa* PcrV protein in *E. coli* prokaryotic host. **7<sup>th</sup> FEMS**. 2017. Spain.
- Purification and *in vitro* biological assessment of V2L2 antibody fragment against *Pseudomonas aeruginosa* PcrV protein. **10<sup>th</sup> National Biotechnology Congress**. 2017. Iran.

- Improving soluble recombinant proteins formation by expression at reduced temperature in specialized *E. coli* strain. **2<sup>nd</sup> international and 10<sup>th</sup> national Biotechnology Congress**. 2017. Iran.
- SUMO fusion protein effect on  $\alpha$ -luffin expression in *E. coli* host. **The 20th Iranian Pharmacy Students' Seminar**. 2017. Iran.
- Influence of the *Escherichia coli* 's host on the solubility of recombinant proteins. **17<sup>th</sup> International and Iranian congress of Microbiology**. 2016.Iran.
- Expression of recombinant  $\alpha$ -luffin in *Escheriachia coli*. **The 17th International & Iranian Congress of microbiology**. 2016. Iran.
- Temperature effect on  $\alpha$ luffin expression and solubility rate in *Escheriachia coli* bacteria as a host. **The 17th International & Iranian Congress of microbiology**. 2016. Iran.
- Anti-HER2 scFv expression in SHuffle host. **12<sup>th</sup> International Congress on Breast Cancer**. 2016.Iran.
- Expression and Purification of hBMP-7 (Human Bone Morphogenetic Protein-7) in *E.coli* using SUMO fusion partner. **The 16th International and Iranian Congress of Microbiology**. 2015. Iran.
- Cloning and Expression of hBMP-7 (Human Bone Morphogenetic Protein-7) in Shuffle: a novel *E. coli* protein expression strain. **The 16th International and Iranian Congress of Microbiology**. 2015. Iran.
- Application of a liquid chromatography method to the analysis of thiamin, riboflavin and niacin in Iranian pasta . Hajimahmoodi Mannan, **10<sup>th</sup> Iranian pharmaceutical Sciences Conferece**. 2006. Iran.
- Study on Adverse Drug Reactions, due to antibiotics in the cases reported to ADR monitoring center from 1998 to 2001. **The 8th Iranian Seminar of Pharmaceutical Sciences (ISPS8)**. 2002.Iran.

### **Work Experiences**

**2014-until now**

Assistant Professor

Department of Medical Biotechnology, Biotechnology Research Center

Pasteur Institute of Iran

**2005 -2006**

Sobhan Pharmaceutical Co.

Main duties and responsibilities:

- Finding new products for local and under license production
- Feasibility study of new product developments specially for anti-cancer products

**2004-2005**

RDU Committee, Food and Drug administration

Main duties and responsibilities:

- Research on Irrational Use of Drugs
- Statistical analysis

**200۳-2004**

Adverse Drug reaction (ADR) monitoring center, Food and Drug administration, Tehran, Iran

**Workshop:**

- Scientific director and lecturer of “**Workshop in targeted drug delivery systems**”, 202۳, Pasteur Institute of Iran.
- Scientific director and lecturer of “**Workshop in strain engineering for improved expression of recombinant proteins in Escherichia coli**”, 2021, Pasteur Institute of Iran.
- Scientific director and lecturer of “**Workshop in post-translational modifications of protein biopharmaceuticals**”, 2021, Pasteur Institute of Iran.
- Lecturer of “**Workshop in Production of therapeutic antibodies by phase display technology**“, 2021, Pasteur Institute of Iran.
- Lecturer of “**Workshop in expression of monoclonal antibodies in eukaryotic expression systems**”, 2016, Pasteur Institute of Iran.

