



ALLA MAGNIFICA RETTRICE  
DELL'UNIVERSITA' DEGLI STUDI DI MILANO

COD. ID: 7003

Il sottoscritto chiede di essere ammesso a partecipare alla selezione pubblica, per titoli ed esami, per il conferimento di un assegno di ricerca presso il Dipartimento di BIOSCIENZE

Responsabile scientifico: Prof.ssa Anna Moroni

[Atiyehsadat Sharifzadeh]

## CURRICULUM VITAE

### INFORMAZIONI PERSONALI

Cognome	Sharifzadeh
Nome	Atiyehsadat

### OCCUPAZIONE ATTUALE

Incarico	Struttura
ASSEGNISTA DI RICERCA TIPO B	UNIVERSITA' DEGLI STUDI DI MILANO

### ISTRUZIONE E FORMAZIONE

Titolo	Corso di studi	Università	anno conseguimento titolo
Laurea Magistrale o equivalente	MOLECULAR BIOLOGY OF THE CELL	UNIVERSITA' DEGLI STUDI DI MILANO	2018
Specializzazione			
Dottorato Di Ricerca	MOLECULAR BIOLOGY	Technischen Universität Darmstadt	2023
Master			
Diploma Di Specializzazione Medica			
Diploma Di Specializzazione Europea			
Altro			

### ISCRIZIONE AD ORDINI PROFESSIONALI

Data iscrizione	Ordine	Città



## LINGUE STRANIERE CONOSCIUTE

lingue	livello di conoscenza
INGLESE	C1

## PREMI, RICONOSCIMENTI E BORSE DI STUDIO

anno	Descrizione premio
2016-2018	BORSA DI STUDIO

## ATTIVITÀ DI FORMAZIONE O DI RICERCA

Identification and characterization of isoform specific interactors to ion channels	<b>descrizione dell'attività</b>
	<p>I have focused on setting the procedure for the expression and for the subsequent purification of a large eukaryotic protein in mammalian HEK293F. The purified protein of interest, the Hyperpolarization activated and Cyclic Nucleotide regulated (HCN4) pacemaker channel, was eventually used to obtain high resolution structures of the channel in the open and closed state by cryo-EM. Furthermore, the protocol of HCN4 purification that I have set has also opened in combination with the structural information the possibility of performing biochemical studies with the full-length protein. This led to the identification and characterization of drugs, which can modulate HCN function in an isoform specific manner. The most important outcome of this work is the use of purified HCN4 as a bait in a yeast displayed nanobody library. The iterative processes of enrichment / selection of the nanobodies binding the desired antigens was done using two selection methods: MACS (Magnetic Activated Cell Sorting) and FACS (Fluorescence Activated Cell Sorting). This screening endeavour resulted in the discovery of new nanobodies, which can modulate with high affinity HCN channel function in an isoform specific manner. This may eventually lead to the first HCN4 specific drug for targeting cardiac arrhythmias related to the malfunction of this pacemaker channel. To further assess the binding of the selected nanobody to HCN4, I use biochemical approaches, such as ITC or cell-binding assays. The successful screening approach set for isolation of nanobodies which bind specifically HCN4, let me to expand this approach for finding of isomer specific nanobodies against other HCN isoforms; e.i. HCN1 and HCN2. Moreover, being an expert in handling displayed nanobodies lets me using the skills to work with other nanobody display systems, such as phage display, to identify nanobodies that interact with ion channels, particularly those involved in the onset or regulation of neuropathic pain.</p>



## ATTIVITÀ PROGETTUALE

Anno	Progetto
2019-2021	Detection of ligand binding to purified HCN channels using the fluorescence size exclusion chromatography-based thermostability (FSEC-TS)
2021-2022	Screening nanobodies bind HCN4 pacemaker channels as targets for drug discovery using an available yeast display nanobody library
2022 up to now	Expression and purification of selected nanobodies and monitoring their interactions to HCN subunit channels using biochemistry and cell-binding assays

## TITOLARITÀ DI BREVETTI

Brevetto

## CONGRESSI, CONVEGNI E SEMINARI

Data	Titolo	Sede
29/06-03/07/2024	48 <sup>th</sup> FEBS congress; Mining biochemistry for human health and well-being	MiCo Convention Centre, Milano, Italy
11-4/09/2022	25 <sup>th</sup> National Congress, Italian Society of Pure and Applied Biophysics (SIBPA). Poster presentations: (1) Isolation of state-dependent nanobodies against HCN4 channels using a yeast surface display platform; (2) Detection of cyclic di-GMP binding to purified HCN4 pacemaker channel	San Miniato (Pisa), Italy
8/02/2022	3rd Chembion Online Symposium, Westfälische. Poster presentation: Detection of cyclic di-GMP binding to purified HCN4 pacemaker channel	Wilhelms-Universität Münster, Germany (Online)
22-6/02/2021	65th Annual Meeting of the Biophysical Society. Abstract: Monitoring ligand binding to purified HCN4 channel proteins	Rockville, MD, USA (Online)
10/01/2020	noMAGIC Winter Retreat 2020; A Biochemical assay to detect ligand binding in purified full length HCN4 channels.	Technische Universität Darmstadt, Germany
10-2/09/2018	noMAGIC International Symposium: Ion channel design using experimental and computational inputs (participation).	Gargnano (BS) Italy



## PUBBLICAZIONI

<b>Libri</b>
<b>Detection of ligand binding to purified HCN channels using fluorescence-based size exclusion chromatography.</b> Saponaro, Andrea, <u>Atiyeh Sadat Sharifzadeh</u> , and Anna Moroni. In <i>Methods in Enzymology</i> , vol. 652, pp. 105-123. Academic Press, 2021.
[titolo, città, editore, anno...]
[titolo, città, editore, anno...]

<b>Articoli su riviste</b>
<b>Structural determinants of ivabradine block of the open pore of HCN4.</b> Saponaro, Andrea, Jan H. Krumbach, Antonio Chaves-Sanjuan, Atiyeh Sadat Sharifzadeh, Alessandro Porro, Roberta Castelli, Kay Hamacher et al. <i>Proceedings of the National Academy of Sciences</i> 121, no. 27 (2024): e2402259121.
<b>Alkali metal cations modulate the geometry of different binding sites in HCN4 selectivity filter for permeation or block.</b> Krumbach, Jan H., Daniel Bauer, Atiyeh Sadat Sharifzadeh, Andrea Saponaro, Rene Lautenschläger, Kristina Lange, Oliver Rauh et al. <i>Journal of General Physiology</i> 155, no. 10 (2023).
<b>Gating movements and ion permeation in HCN4 pacemaker channels.</b> Saponaro, Andrea, Daniel Bauer, M. Hunter Giese, Paolo Swuec, Alessandro Porro, Federica Gasparri, Atiyeh Sadat Sharifzadeh et al. <i>Molecular Cell</i> 81, no. 14 (2021): 2929-2943.

<b>Atti di convegni</b>
[titolo, struttura, città, anno]
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## ALTRE INFORMAZIONI


Le dichiarazioni rese nel presente curriculum sono da ritenersi rilasciate ai sensi degli artt. 46 e 47 del DPR n. 445/2000.

Il presente curriculum, non contiene dati sensibili e dati giudiziari di cui all'art. 4, comma 1, lettere d) ed e) del D.Lgs. 30.6.2003 n. 196.

**RICORDIAMO** che i curricula **SARANNO RESI PUBBLICI** sul sito di **Ateneo** e pertanto si prega di non inserire dati sensibili e personali. Il presente modello è già precostruito per soddisfare la necessità di pubblicazione senza dati sensibili.

Si prega pertanto di **NON FIRMARE** il presente modello.

Luogo e data: \_\_\_\_\_Milano\_\_\_\_\_, \_\_\_\_\_18/11/2024\_\_\_\_\_