
BIOGRAPHICAL SKETCH

NAME: Zumrut, Hasan Ekrem

eRA COMMONS USER NAME: ZUMRUTHE

POSITION TITLE: Graduate Student

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	START DATE MM/YYYY	END DATE MM/YYYY	FIELD OF STUDY
Abant Izzet Baysal Univ. Bolu/Turkey	BS	09/2005	06/2009	Chemistry
City College of New York	MS	01/2010	01/2013	Biochemistry
The Graduate Center, CUNY, New York, NY	Ph.D.	08/2013	present	Biochemistry

A. Personal Statement

I am currently a Ph.D. student in Biochemistry and working under the supervision of Dr. Prabodhika Mallikaratchy. DNA aptamers are a novel class of synthetic molecules capable of specific target recognition and are promising tools for immunotherapy. Most of my research so far has been focused on the development of a novel aptamer selection strategy termed Ligand-guided selection, LIGS to identify highly specific aptamers against key receptors in immune cells. Using LIGS method, I have recently isolated high affinity DNA aptamers against a key immune receptor; CD3-TCR complex expressed on the surface of T-cells.

Prior to joining Dr. Mallikaratchy's laboratory I performed molecular genetics studies at Albert Einstein College of Medicine using zebrafish as a model organism. Based on our research, we elucidated the function of a previously uncharacterized transcription factor, cited3. Our results showed that cited3 acts as a transcriptional co-activator to control muscle cell differentiation and muscle cell growth.

B. Positions and Honors

Positions and Employment

2014 – 2019 Graduate Research Assistant, Mallikaratchy Lab, Lehman College

2014 - present Adjunct Lecturer, Lehman College, CUNY

Honors

2013 - 2018 CUNY Science Scholarship

2017-2018 CUNY Graduate Center Dissertation Fellowship

C. List of Publications and Presentations

Publications

1. Zumrut, H.E., Batool, S., Argyropoulos, K.V., Williams N, Azad R, Mallikaratchy, P.R. (2019) Integrating ligand-receptor interactions and in vitro evolution for streamlined discovery of artificial ligands against a multi-domain cell surface receptor in human T-cells. *Mol Ther Nucleic Acids* Accepted
2. Batool, S., Argyropoulos, K.V., Azad, R., Okeoma, P., Zumrut, H., Bhandari, S., Dekhang, R., and Mallikaratchy, P.R. (2019) Dimerization of an aptamer generated from Ligand-guided selection (LIGS) yields a high affinity scaffold against B-cells. *Biochim.Biophys.Acta Gen.Subj.* 1863, 232-240.
3. Batool, S., Bhandari, S., George, S., Okeoma, P., Van, N., Zumrut, H.E., and Mallikaratchy, P. (2017) Engineered Aptamers to Probe Molecular Interactions on the Cell Surface. *Biomedicines*. 5, 10.3390/biomedicines5030054.
4. Zumrut, H.E., Batool, S., Van, N., George, S., Bhandari, S., and Mallikaratchy, P. (2017) Structural optimization of an aptamer generated from Ligand-Guided Selection (LIGS) resulted in high affinity variant toward mlgM expressed on Burkitt's lymphoma cell lines. *Biochim.Biophys.Acta Gen.Subj.* 1861, 1825-1832.
5. Zumrut, H.E., Ara, M.N., Maio, G.E., Van, N.A., Batool, S., and Mallikaratchy, P.R. (2016) Ligand-guided selection of aptamers against T-cell Receptor-cluster of differentiation 3 (TCR-CD3) expressed on Jurkat.E6 cells. *Anal.Biochem.* 512, 1-7.
6. Zumrut, H.E., Ara, M.N., Fraile, M., Maio, G., and Mallikaratchy, P. (2016) Ligand-Guided Selection of Target-Specific Aptamers: A Screening Technology for Identifying Specific Aptamers Against Cell-Surface Proteins. *Nucleic Acid Ther.* 26, 190-198.
7. Mallikaratchy, Prabodhika, Hasan Zumrut, and Naznin Ara. 'Discovery Of Biomarkers Using Aptamers Evolved In Cell-SELEX Method'. Aptamers Selected by Cell-SELEX for Theranostics (2015): 265-299. Web. 12 Aug. 2015.
8. Devakanmalai, G.S., Zumrut, H.E., and Ozbudak, E.M. (2013) Cited3 activates Mef2c to control muscle cell differentiation and survival. *Biol.Open.* 2, 505-514.

Presentations: Oral and Poster

1. "Optimization of structure of an aptamer discovered utilizing Ligand Guided Selection (LIGS) yields high affinity aptamer." Hasan E. Zumrut, Sana Batool, Nabeela Van, Prabodhika Mallikaratchy, The 253rd American Chemical Society National Meeting and Exposition, San Francisco, CA April, 2017: Poster.
2. Designing bi-specific aptamers for increased stability in human serum." George E. Maio, Hasan E. Zümürüt, Sana Batool, Nabeela Van, Prabodhika Mallikaratchy, The 252nd American Chemical Society National Meeting and Exposition, Philadelphia, August 21, 2016: Poster.
3. "Designing bispecific aptamers for increased stability in human serum" George Maio, Osita J. Enweronye, Hasan Zümürüt, Prabodhika Mallikaratchy, The 64th Annual Undergraduate Research Symposium, American Chemical Society of New York City, May 07th 2016: Oral
4. "Designing bispecific aptamers for increased stability in human serum" George Maio, Osita J. Enweronye, Hasan Zumrut, Prabodhika Mallikaratchy, The 8th Annual Research and Scholarship Day, April 15th 2016: Oral
5. "Generation of T-cell Specific Aptamers Using a Novel Cell-SELEX Method: Antibody Guided Cell-SELEX Technology" Hasan Zümürüt, Shomi Chakrabarti, Mst Naznin Ara, George Maio, Prabodhika Mallikaratchy. The 67th PittCon Conference & Expo, Atlanta, Georgia, March 10th 2016: Poster.

6. "Selection of Aptamers Targeting B-Cell Receptor (BCR) Using Antibody Guided Cell-SELEX Technology– A Novel Approach" Shomi Chakrabarti, Hasan E Zümrüt, George Maio, Mst Naznin Ara, Prabodhika Mallikaratchy. The 67th PittCon Conference & Expo, Atlanta, Georgia, March 10th 2016: Poster.
7. "Monoclonal Antibody Guided SELEX (mAb-guided-SELEX): a novel technology for selecting epitope specific DNA aptamers against cell-surface markers" Hasan E. Zumrut, Mallikaratchy Lab, The Biodesign Megameeting, November 13th, 2015: Oral.
8. "Selection of aptamers targeting T-cell receptor (TCR) and B-cell receptor (BCR) using a novel cell-SELEX method", Hasan E. Zumrut, Mst. Naznin Ara, Shami Chakrabarti, George Maio, Prabodhika Mallikaratchy, The 7th Annual Research and Scholarship Day, April 24th, 2015: Poster.
9. "Investigation of the role of divalent metal is stability of aptamer-target binding" Daniel Stremt, Hasan Zümrüt, Osita Jeffrey Enweronye, Aanchal Tyagi, Naralys Batista and Prabodhika Mallikaratchy, The 3rd Annual Bronx SciFest, April 24th, 2015: Poster.
10. "Design and Development of bispecific aptamers" Osita J. Enweronye, Kaniz Rizwana, Naralys Batista, Aanchal Tyagi, Hasan Zümrüt, Prabodhika Mallikaratchy, Prabodhika Mallikaratchy, The 7th Annual Research and Scholarship Day, April 24th, 2015: Poster.
11. "Design and Development of pH sensitive aptameric micelles", Naralys Batista, Aanchal Tyagi, Osita Jeffrey Enweronye, Hasan Zümrüt, Prabodhika Mallikaratchy, The 7th Annual Research and Scholarship Day, April 24th, 2015: Poster.