

## **Nousheen Zaidi (Ph.D.)**

### **Associate Professor**

Cancer Biology Lab – MMG, University of the Punjab, Lahore

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### **Director**

Cancer Research Centre (CRC), University of the Punjab, Lahore

**Email:** [director.crc@pu.edu.pk](mailto:director.crc@pu.edu.pk)

### **Education**

- PhD in Biochemistry, Eberhard Karls University, Tübingen, Germany. 2005-2008.
- MS in Genetics, Karachi University, 2000-2002

### **Professional Appointments**

- Director, Cancer Research Centre (CRC) **University of the Punjab**, Lahore (Dec 2019-Present).
- Associate Professor (Tenure Track) **University of the Punjab**, Lahore (Nov 2017-Present).
- Assistant Professor, **University of the Punjab**, Lahore (July 2012 – Oct 2017).
- Postdoctoral Research Associate at the Department of Oncology, Drug Discovery Group, **Johnson and Johnson, Beerse, Belgium** (2011 – 2012 June).
- Postdoctoral Researcher at the Department of Microbiology & Immunology, **Albert Einstein College of Medicine, New York, USA** (2009 – 2010).
- Post PhD Researcher at **Eberhard Karls University, Tübingen, Germany** (Aug, 2008 – Jan, 2009).
- Research officer at **The Aga Khan University, Karachi** (2002-2004)

### **Visiting Appointments**

- **Forthcoming:** Visiting scholar at **Federal Institute for Materials Research and Testing, Berlin, Germany** (Jun-Aug 2021).
- Visiting scholar at **Federal Institute for Materials Research and Testing, Berlin, Germany** (May-Aug 2019).
- Visiting scholar at **Federal Institute for Materials Research and Testing, Berlin, Germany** (May-Aug 2018).
- Visiting scholar at **Charité – Universitätsmedizin Berlin, Berlin, Germany** (May-Aug 2017).
- Visiting scholar at **Eberhard Karls University, Tübingen, Germany** (July-Sep 2015).

### **Selected Honors & Scholarships**

- **Forthcoming:** Fellowship for Renewed Research Stay by the **Humboldt Foundation**, 2021 (June-Aug).
- Georg Forster Research Fellowship for Experienced Researchers by the **Humboldt Foundation**, 2017- 19.
- Scholarship to attend intensive German language course at Goethe Institute, Berlin by the **Humboldt Foundation**, March-June 2017.
- Visiting Researcher Fellowship awarded by **German Academic Exchange Service (DAAD)** under Re-Invitation Program for Former Scholarship Holders 2015.
- PhD Fellowship awarded by **Higher Education Commission, Pakistan and German Academic Exchange Service (DAAD)** 2005-2008.

- PhD Fellowship awarded by The Aga Khan University, Karachi 2004.
- Gold Medal for 1st position in M.Sc. Genetics (2002) by University of Karachi.

## **Publications**

### → **Book chapters**

1. Ameer F, Munir R, and **Zaidi N.** Invited chapter in: Lipid Metabolism in Encyclopedia of Cancer 3rd edition. 2019.
2. **Zaidi N** and Kalbacher H. Cathepsin E, Invited chapter in: The Handbook of Proteolytic Enzymes 3rd Edition. 2012.

### → **Journal articles**

1. Riaz N, Munir R, Liseć J, **Zaidi N:** Revisiting the Association between Human Leukocyte Antigen and End-Stage Renal Disease. Accepted for publication in PLoS One August 2020.
2. Liseć J, Jaeger C, Rashid R, Munir R, **Zaidi N:** Cancer cell lipid class homeostasis is altered under nutrient-deprivation but stable under hypoxia. *BMC Cancer* 2019, 19(1):501.
3. Munir R, Liseć J, Swinnen JV, **Zaidi N:** Lipid metabolism in cancer cells under metabolic stress. *Br J Cancer* 2019, 120(12):1090-1098.
4. Ameer F, Munir R, Usman H, Rashid R, Shahjahan M, Hasnain S, **Zaidi N:** Lipid-load in peripheral blood mononuclear cells: Impact of food-consumption, dietary-macronutrients, extracellular lipid availability and demographic factors. *Biochimie* 2017, 135:104-110.
5. Usman H, Ameer F, Munir R, Iqbal A, Zaid M, Hasnain S, Scanduzzi L, **Zaidi N:** Leukemia cells display lower levels of intracellular cholesterol irrespective of the exogenous cholesterol availability. *Clin Chim Acta* 2016, 457:12-17.
6. Iqbal A, Zaid M, Munir R, Usman H, Kalbacher H, Scanduzzi L, **Zaidi N:** Atypical plasma lipid profiles in leukemia. *Clin Chim Acta* 2016, 452:129-133.
7. Usman H, Rashid R, Ameer F, Iqbal A, Zaid M, Hasnain S, Kalbacher H, **Zaidi N:** Revisiting the dyslipidemia associated with acute leukemia. *Clin Chim Acta* 2015, 444:43-49.
8. Rashid R, Ameer F, Kalbacher H, Scanduzzi L, **Zaidi N:** Aberrant de novo cholesterol synthesis: Clinical significance and implications. *Clin Chim Acta* 2015.
9. Munir R, Usman H, Hasnain S, Smans K, Kalbacher H, **Zaidi N:** Atypical plasma lipid profile in cancer patients: cause or consequence? *Biochimie* 2014, 102:9-18.
10. Zaid M, Ameer F, Munir R, Rashid R, Farooq N, Hasnain S, **Zaidi N:** Anthropometric and metabolic indices in assessment of type and severity of dyslipidemia. *J Physiol Anthropol* 2017, 36:19.
11. Daniels VW, Smans K, Royaux I, Chypre M, Swinnen JV, **Zaidi N:** Cancer cells differentially activate and thrive on de novo lipid synthesis pathways in a low-lipid environment. *PLoS One* 2014, 9:e106913.
12. Ameer F, Scanduzzi L, Hasnain S, Kalbacher H, **Zaidi N:** De novo lipogenesis in health and disease. *Metabolism* 2014.
13. **Zaidi N,** Lupien L, Kuemmerle NB, Kinlaw WB, Swinnen JV, Smans K: Lipogenesis and lipolysis: The pathways exploited by the cancer cells to acquire fatty acids. *Prog Lipid Res* 2013, 52:585-589.
14. **Zaidi N,** Swinnen JV, Smans K: ATP-citrate lyase: a key player in cancer metabolism. *Cancer Res* 2012, 72:3709-3714.
15. **Zaidi N,** Royaux I, Swinnen JV, Smans K: ATP citrate lyase knockdown induces growth arrest and apoptosis through different cell- and environment-dependent mechanisms. *Mol Cancer Ther* 2012, 11:1925-1935.
16. Chypre M, **Zaidi N,** Smans K: ATP-citrate lyase: a mini-review. *Biochem Biophys Res Commun* 2012, 422:1-

4.

17. **Zaidi N**, Maurer A, Nieke S, Kalbacher H: Cathepsin D: a cellular roadmap. *Biochem Biophys Res Commun* 2008, 376:5-9.
18. **Zaidi N**, Kalbacher H: Cathepsin E: a mini review. *Biochem Biophys Res Commun* 2008, 367:517-522.
19. **Zaidi N**, Herrmann C, Herrmann T, Kalbacher H: Emerging functional roles of cathepsin E. *Biochem Biophys Res Commun* 2008, 377:327-330.
20. Waraich RS, **Zaidi N**, Moeschel K, Beck A, Weigert C, Voelter W, Kalbacher H, Lehmann R: Development and precise characterization of phospho-site-specific antibody of Ser(357) of IRS-1: elimination of cross reactivity with adjacent Ser(358). *Biochem Biophys Res Commun* 2008, 376:26-31.
21. Burster T, Reich M, **Zaidi N**, Voelter W, Boehm BO, Kalbacher H: Cathepsin E regulates the presentation of tetanus toxin C-fragment in PMA activated primary human B cells. *Biochem Biophys Res Commun* 2008, 377:1299-1303.
22. **Zaidi N**, Herrmann T, Voelter W, Kalbacher H: Recombinant cathepsin E has no proteolytic activity at neutral pH. *Biochem Biophys Res Commun* 2007, 360:51-55.
23. **Zaidi N**, Herrmann T, Baechle D, Schleicher S, Gogel J, Driessen C, Voelter W, Kalbacher H: A new approach for distinguishing cathepsin E and D activity in antigen-processing organelles. *FEBS J* 2007, 274:3138-3149.
24. **Zaidi N**, Burster T, Sommandas V, Herrmann T, Boehm BO, Driessen C, Voelter W, Kalbacher H: A novel cell penetrating aspartic protease inhibitor blocks processing and presentation of tetanus toxoid more efficiently than pepstatin A. *Biochem Biophys Res Commun* 2007, 364:243-249.

→ **Other Publications**

1. Cancer: Myths and Facts (Awareness Booklet), 2020. **Cancer Research Centre**.
2. **Zaidi, N.** (2015). Science and religion. The News. <http://tns.thenews.com.pk/science-religion/#.WaMFdtFLfIU>

→ **Abstracts published in Journals**

1. **Zaidi N**. Impact of low-lipid environment on de novo lipid synthesis pathways in cancer cells. *Journal for ImmunoTherapy of Cancer* 2015, 3(Suppl 2):P424
2. Abbas F, Sanaullah R, **Zaidi N**, Talati J, Siddiqui AA, Siddiqui K. A comparative assessment of the sensitivity of telomerase assay with other molecular markers for the diagnosis of human bladder cancer. **JPMA** (2002) 52: [Suppl12] ppS33.
3. Abbas F, Sanaullah R, **Zaidi N**, Talati J, Siddiqui AA, Siddiqui K. A comparative assessment of the sensitivity of TRAP assay in diagnosis of human bladder cancer. **BJU International** 2004. Vol 94, Supplement.

→ **Preprints**

1. Munir R, Liseć J, Jaeger C, **Zaidi N**: Abundance, fatty acid composition and saturation index of neutral lipids are significantly different between isogenic primary and metastatic colon cancer cell lines. 2019. bioRxiv 690685; doi: <https://doi.org/10.1101/690685>

## Mentoring Experience

Level	Status	Student's Name	Thesis Title	Year
Ph.D	Completed	Muhammad Zaid	Genetic, Metabolic and Anthropometric Variations Associated with Aberrant Plasma Lipid Profiles	2014-19
		Hina Usman	Regulation of Plasma and Cellular Cholesterol Levels in Acute Myeloid and Lymphatic Leukemia	2013-17
		Rimsha Munir	2D versus 3D cell culture: studying the metabolic pathways in cancer cells.	2014-19
		Fatima Ameer	Lipid Metabolism in malignant and non-malignant hematopoietic cells.	2014-19
	Submitted	Rida Rashid	Extracellular Lipid Availability and Lipid Metabolism in Cancer Cells	2014-20
	Ongoing	Naila Noreen	Expression of human leukocyte antigens in cancer cells	2018-present
		Zunaira Shoukat	Studying the interplay between tumor metabolism and obesity	2016-present
Master's	Completed	Muniba Basir	Microarray profiles of lipid-deprived cancer cells.	2019-20
		Naila Shoaib	Effect of palmitate-supplementation on microarray profiles of lipid-deprived cancer cells.	2019-20
		Arifa Ashraf	A Study on the Potential Anti-Proliferative effects of Different Traditional South Asian Medicinal Plant Extracts on Cancer Cells.	2019-20
		Farhad Ali Shah	Allele Polymorphism and Haplotype Diversity of HLA-A, -B, -C, -DRB1, -DQB1 and -DQA1 Loci in Pakistani Population	2019
		Maham	The effect of short-term moderate physical activity intervention on plasma lipid profiles and lipid-load in peripheral blood mononuclear cells	2018-19
		Mehar-un-Nisa Saleem	Studying the association of various demographics, metabolic and clinical factors with a body shape index (ABSI)	2017-18
		Maria Ramzan	Effect of hypoxia on cell proliferation and lipid-load: A comparison between 2-dimensional (2D) and 3-dimensional (3D) cell culture systems	2016-17
		Areeb Iqbal	Cholesterol Homeostasis in Acute Leukaemia Patients: Studying the Intra- and Extracellular Cholesterol Content	2014-15
		Rida Rashid	Lipoproteins and lipoprotein ratios: studying anomalies and correlations in cancer patients.	2013-14
		Fatima Ameer	Metabolic profiles of haematological cancer patients revisited: studying the irregularities and interdependencies of plasma glucose and lipid levels	2013-14
		Rimsha Munir	Blood lipid profiles in cancer patients- site specific analysis.	2012-13

<b>Undergrad</b>	<b>Completed</b>	Bushra Bibi	The effects of metabolic stress on cell proliferation rates in isogenic primary (SW480) and metastatic (SW620) colon cancer cell lines	2019-20
		Aqsa Javed	Impact of cell seeding-density on hypoxia-induced lipid accumulation in cancer cells.	2019-20
		Wajeeha Zainab	The effect of short-term moderate physical activity intervention on various metabolic parameters in healthy participants.	2019-20
		Noshaba Ishtiaq	Hypoxia-induction by parafilm-wrap method vs. cobalt chloride method: effects on cell proliferation and triglyceride-accumulation in HCT-116 colon cancer cells	2018-19
		Najeeha Javed	Duration of hypoxia: effects on cell proliferation and cellular cholesterol levels in HCT-116 colon cancer cells.	2018-19
		Amna Saleem	Studying the association between body roundness index (BRI) and plasma lipid profiles	2017-18
		Hafiza Ishrat Fatima	Triglyceride and phospholipid content in cancer cells under metabolic stress	2017-18
		Ayesha Ali	Effect of cafeteria-style diets on metabolic-factors and behavioural-traits in BALB/c mice.	2016-17
		Nimrah Farooq	Impact of diets with different nutritive values on plasma lipid profiles and lipid-load in peripheral blood mononuclear cells	2016-17
		Tuba Fayyaz	Breast cancer awareness and screening practices: studying the impact of educational background, family history of cancer and brief video training sessions.	2016-17
		Shajan Qaisirani	Lipid homeostasis in peripheral blood mononuclear cells	2015-16
		Ibrar Iqbal	Novelty-seeking trait in humans and mice: studying the impact of social-environment	2015-16
		Komal Saleem	Acute Myeloid Leukemia: Metabolic Alterations in the Peripheral Blood Environment and Intracellular Cholesterol Reservoirs	2014-15
		Hafsa Anwar	Acute Lymphocytic Leukemia: Metabolic Alterations in the Peripheral Blood Environment and Intracellular Cholesterol Reservoirs	2014-15
		Komal Ejaz	Plasma glucose levels and cancer: revisiting the differences between control and cancer populations	2013-14
		Rabbia Tariq	Plasma lipids and lipoproteins in haematological malignancies: revisiting the differences between control subjects and cancer patients	2013-14
		Asma Kalsoom	Plasma lipids and lipoproteins in gynaecological malignancies: revisiting the differences between control subjects and cancer patients	2013-14
M. Jaffer Hussain	Aberrant plasma cholesterol profile in cancer patients	2012-13		

## **Teaching Experience**

### **Associate Professor**

**2017-Present**

*Department of Microbiology & Molecular Genetics, University of the Punjab*

#### **Courses:**

- Oncology (Undergrad Level) (25-30 students per session)
- Labs in Oncology (Undergrad Level) (25-30 students per session)
- Cancer Genetics (Master's Level) (15-25 students per session)
- Cell Culture Techniques (Undergrad Level) (25-30 students per session)
- Introduction to Metabolomics (Ph.D. Level) (10-20 students per session)

**Short/Summer School Courses:** Courses titled Assays in Cancer Biology, Working with Tumor Spheroids, GraphPad Prism, Craft of Scientific Writing, Cell Culture Techniques, and Applications, and Methods in Cancer Biology. These courses were offered to graduate and undergraduate biology students. The number of students ranged from 20 to 40 for different sessions.

**Responsibilities:** Planning course content, delivering lectures, and evaluating performance.

### **Associate Professor/Director**

**2019-Present**

*Cancer Research Centre, University of the Punjab*

**Short/Summer School Courses:** Courses titled Tumor Metabolism (Forthcoming Feb 2021), Cancer Biology, R-Programming, & GraphPad Prism. These courses were offered to graduate and undergraduate biology students. The number of students ranged from 20 to 40 for different sessions.

**Responsibilities:** Planning course content, delivering lectures, and evaluating performance

### **Assistant Professor**

**2012-2016**

*Department of Microbiology & Molecular Genetics, University of the Punjab*

#### **Courses:**

- Oncology (Undergrad Level) (25-30 students per session)
- Cancer Genetics (Master's Level) (15-25 students per session)
- Behavioral Genetics (Ph.D. Level) (10-20 students per session)
- Cell Biology (Undergrad Level) (25-30 students per session)
- Cell Biology Labs (Undergrad Level) (25-30 students per session)

**Short/Summer School Courses:** Courses titled Craft of Scientific Writing, Western Blotting, and Biosafety and Risk Assessment. These courses were offered to graduate and undergraduate biology students. The number of students ranged from 20 to 60 for different sessions.

**Responsibilities:** Planning course content, delivering lectures, and evaluating performance.

### **Lab Instructor**

**2006-2009**

*University of Tubingen*

Assisted Dr. Hubert Kalbacher with the delivery of this pre-designed practical course in immunological techniques.

## **Reviewing Experience**

### → **Committees/Organizations**

- Dutch Cancer Society (KWF Kankerbestrijding), (2018 - Present).
- Biosafety Bio-resource Committee, Punjab University, Lahore, (2013 - Present).
- Reviewer for National Science Centre Poland (2020).
- Reviewer for Higher Education Commission, Pakistan (2020-Present).

### → **Journals**

Ad Hoc Reviewer for:

- FEBS Open Bio (2018)
- Cellular Physiology and Biochemistry (2017).
- Journal of Clinical Lipidology (2017).
- British Journal of Cancer (2017).
- BBA- Clinical (2017).
- Journal of Lipid Research (2016, 2017).
- Medical Principles and Practice (2016)
- Future Oncology (2016).
- EB Bioscience (2016).
- Oncotarget (2016).
- International Journal of Cancer (2015).
- Journal of Surgical Oncology (2015).
- Lipids (2015).
- Food and Chemical Toxicology (2014).
- Biochemical Pharmacology (2014).
- BBA - Molecular Cell Research (2013).

## **Other Professional Services**

- Coordinator for **Molecular Biology Education and Research Society (MBERS)**, MMG, Punjab University.
- Member **Biosafety Bio-resource Committee**, Punjab University, Lahore. (2013, March-Present).
- Worked on a project related to generating cancer-related content (booklets and video clips <https://www.youtube.com/watch?v=Vle0rd1ggzw>) in local Pakistani languages.
- Curated a poster exhibition on Cancer Myths and Misconceptions together with undergrad students.

## **Selected Talks**

- Metabolic Crosstalk between Leukemia Cells and Tumor Microenvironment presented at Updates in Hematological Malignancies - LUMS, Lahore, Pakistan, 3rd-4th Jan 2020.
- Cancer Myths and Facts presented at CancerBio Conference Feb 2020.
- History of Cancer invited talk at University of Management and Technology, 14th March, 2019.
- Cancer cell lipid class homeostasis is altered under nutrient-deprivation but stable under hypoxia invited talk at University of Management and Technology, 14<sup>th</sup> March, 2019.

## **Selected Posters Presentations**

- Poster presented at **Society for Immunotherapy of Cancer - 30th Anniversary Annual Meeting**, Maryland, USA, Nov 2015.

- Poster presented at **ICACT - 25th International congress on Anti-Cancer Treatment**, Paris, France. Feb 2014.
- Poster presented at Symposium: **Tumor Metabolism meets Immunology**. Regensburg, Germany. April 2013.
- Poster presented at **Keystone symposium: Cancer and Metabolism**. Banff, Alberta, Canada. February 2012.
- Poster presented at **Annual Meeting of the German Society for Immunology**. Heidelberg, Germany. September 2007.
- Poster presented at **3rd Summer School in Proteomic Basics**. South Tyrol, Italy. August 2006.

### **Events Organized**

- Online Workshop on R programming (for beginners), 27th – 28th July 2020.
- Online Workshop on GraphPad Prism on 13th July 2020.
- CancerBio Conference 2020, Punjab University, Lahore, Feb, 2020.
- Workshop titled *Assays in Cancer Biology*, Punjab University, Lahore, Dec 2019.
- Workshop titled *Working with Tumor Spheroids*, Punjab University, Lahore, Dec 2019.
- Workshop on *GraphPad Prism 8*, Punjab University, Lahore, 4<sup>th</sup> November 2019.
- Three-Day Breast Cancer Awareness Camp at Punjab University, Oct 2019.
- Workshop on Craft of Scientific Writing, Punjab University, Lahore, Sep, 2019.
- A Short Course on Cancer Biology-2019 Edition, Punjab University, Lahore, Feb, 2019.
- Workshop on Craft of Scientific Writing, Punjab University, Lahore, Feb, 2018.
- Workshop on Cell Culture Techniques and Applications, Punjab University, Lahore, Nov, 2018.
- Cell Culture Quiz, Punjab University, Lahore, 2018.
- Cancer Genetics Quiz, Punjab University, Lahore, 2018.
- Workshop on Methods in Cancer Biology, Punjab University, Lahore, Feb, 2017.
- Workshop on Eukaryotic Cell Culture, Punjab University, Lahore, Feb, 2017.
- Cell Culture Quiz, Punjab University, Lahore, 2016.
- Oncology Quiz, Punjab University, Lahore, 2016.
- Workshop on Craft of Scientific Writing, Punjab University, Lahore, Dec, 2016.
- Workshop on Western Blotting, Punjab University, Lahore, April, 2016.
- Workshop on 2D and 3D Eukaryotic Cell Culture System, Punjab University, Lahore, 9<sup>th</sup> -10<sup>th</sup> Feb, 2016.
- Workshop on *GraphPad Prism 6*, Punjab University, Lahore, 24<sup>th</sup> November 2015.
- Workshop on Western Blotting, Punjab University, Lahore, 5th May 2015.
- Workshop on Eukaryotic Cell Culture Techniques, Punjab University, Lahore, 28th April 2015.
- Workshop on Biosafety and Risk Assessment, Punjab University, Lahore, 19th April 2014.

### **Short Courses/Training Workshops Attended**

- German Language Course, forthcoming Mar-June 2017, Goethe institute, Berlin, Germany.
- Gaslini Advanced Course in Basic and Applied Immunology, 2007 Genoa, Italy.
- German Language Course, 2005 Jan-Mar, Goethe institute, Mannheim, Germany.
- German Language Course, 2004 Sep-Nov, Goethe institute, Karachi, Pakistan.
- Molecular Biology Techniques. Sep 2004, , The Aga Khan University, Karachi, Pakistan.



## Grants & Funding

Status	Funding Period	Funding Agency	Grant Title	Amount Granted
<b>Active Grants</b>	2021	Punjab University	Mapping COVID19 Cases Across Lahore	200,000 PKR
	2020-21	SSGC	COVID-19 Social Media Infodemic	5000 USD
	2020-21	Punjab University - under Projects for Cancer Research Centre.	Effect of environmental stress on metabolic gene expression profiles of cancer cells	400,000 PKR
<b>Completed Grants</b>	2020	Pakistan Science Foundation	Grant to organize a conference on cancer biology.	
	2016-17	COMSTECH-TWAS Research Grants	Mevalonate pathway: a potential target for leukemia therapeutics.	820,000 PKR
	2014 - 19	Higher Education Commission	National Research Program for Universities - Anticancer Therapy: Targeting De Novo Lipid Synthesis.	16,790,000 PKR
	2019	Punjab University	Annual Research Grant	200,000 PKR
	2017	Punjab University	Annual Research Grant	150,000 PKR
	2016	Punjab University	Annual Research Grant	150,000 PKR
	2015	Punjab University	Annual Research Grant	150,000 PKR
	2014	Punjab University	Annual Research Grant	150,000 PKR
	2013	Higher Education Commission	<b>Start-up Research Grant</b> - Identification and Validation of Promising Drug Targets and Anti-targets for Cancer Therapy within the Mevalonate Pathway	500,000 PKR
	2013	Punjab University	Annual Research Grant	150,000 PKR
	2013	Punjab University	<b>Seed Grant</b> - Grant for developing eukaryotic cell culture facility at MMG, Punjab University.	250,000 PKR

## Languages

- Urdu (native proficiency)
- English (native proficiency)
- German (intermediate proficiency, B1)
- Sindhi (advanced proficiency)
- Punjabi (advanced proficiency)
- Hindi (basic proficiency in Devnagri script)