



Faculty Details Proforma for DU Web-site

Title	Prof./Dr./Mr./Ms./ Mrs. Dr.	First Name	Dau	Last Name	Dayal	Photograph
Designation		Assistant Professor				
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Educational Qualifications						
Degree	Institution				Year	
Ph.D.	M.D University Rohtak, India				2012	
M.Phil. / M.Tech.						
PG	M.D University Rohtak, India				2005	
UG	M.D University Rohtak, India				2003	
Any other qualification						
Career Profile						
<ul style="list-style-type: none"> Assistant Professor, Department of Biochemistry, University of Delhi South campus, New Delhi, India, Oct. 2020 – till date Post-doctoral Fellow, Department of Zoology, Banaras Hindu University, Varanasi, India, 2017-2020 Post-doctoral Fellow, Institute of Evolution, University of Haifa, Israel, 2012-2016. 						
Areas of Interest / Specialization						
<p>The lab works with <i>Drosophila</i> – Fly model. Integrating phenotype to state-of-the-art new generation tools and techniques, we are particularly intrigued to understand "how the genome evolves in new environments". It is our fly collection that has flies adapted to stress conditions in their natural home, and the adaptability has been induced in the laboratory setting after years of exposure to stress conditions; this is the key to creating unique material for studying the complex genetic architecture underlying the stress adaptations. As tight linkage between beneficial and deleterious alleles impedes rapid adaptation, recombination decouples beneficial and deleterious alleles and results in a wide array of high-fitness genotypes, which accelerate adaptation. For lab-evolved flies, of which we identify genomic signatures, we extend to map recombination dynamics at fine scales to gain a better understanding of genome evolution. With the growing interest, we have also begun to model human diseases and life-style disorders in <i>Drosophila</i>, whose genetic basis remains over-sighted due to complex genetic architecture underlying the condition and the important role of the environment in determining the trait, obesity being one of them.</p>						

Subjects Taught

M.Sc Biochemistry : Advanced Techniques in Genomics for Biotechnology – BCCC401
: Advanced Techniques in Biochemistry – BCEC104 (partly)
M.Sc Genetics : Basics of Biochemistry (open elective) – BCOE401

Publications Profile

<https://scholar.google.co.in/citations?user=dYZ0lkwAAAAJ&hl=en>

1. **Aggarwal, D.D.**, Rybnikov, S., Sapielkin, S., Rashkovetsky, E., Frenkel Z., Singh, M., Michalak, P., Korol, A.B. (2021) Seasonal changes in recombination characteristics in a natural population of *Drosophila melanogaster*. *Heredity* (npg). doi.org/10.1038/s41437-021-00449-2. **(First author and corresponding author)**.
2. **Aggarwal DD**, Rybnikov S, Cohen I, Frenkel Z, Rashkovetsky E, Michalak P, Korol AB (2019) Desiccation-induced changes in recombination rate and crossover interference in *Drosophila melanogaster*: evidence for fitness-dependent plasticity. *Genetica*, 147: 291-302.
3. Kang L*, **Aggarwal DD***, Rashkovetsky E, Korol AB, Michalak P (2016). Rapid genomic changes in *Drosophila melanogaster* adapting to desiccation stress in an experimental evolution system. *BMC Genomics* 17:233. *First two authors contributed equally.
4. **Aggarwal DD**, Rashkovetsky E, Michalak P, Cohen I, Ronin Y, Zhou D, Haddad GG, Korol AB (2015). Experimental evolution of recombination and crossover interference in *Drosophila* caused by directional selection for stress-related traits. *BMC Biology* 13:101. DOI 10.1186/s12915-015-0206-5.
5. **Aggarwal DD** (2014). Physiological basis of starvation resistance in *Drosophila lenotia*. Analysis of sexual dimorphism. *The Journal of Experimental Biology* 217, 1849-1859.
6. **Aggarwal DD***, Ranga P, Kalra B, Parkash R, Rashkovetsky E, Bantis LE (2013). Rapid effects of humidity acclimation on stress resistance in *Drosophila melanogaster*. *Comparative Biochemistry and Physiology, Part A: Molecular and integrated physiology* 166 (1), 81-90. **(First author and corresponding author)**
7. Parkash R, Ranga P, **Aggarwal DD** (2013). Developmental acclimation to low or high humidity conditions affect starvation and heat resistance of *Drosophila melanogaster*. *Comparative Biochemistry and Physiology, Part A: Molecular and integrated physiology* 175, 46-56.
8. Parkash R, **Aggarwal DD**, Singh D, Lambod C (2013). Divergence for water balance mechanisms and acclimation potential in body color morphs of *Drosophila ananassae*. *Journal of experimental Zoology- A* 321, 13-27.
9. Bhan V, Parkash R, **Aggarwal DD** (2013). Effects of body-size variation in flight related traits in latitudinal populations of *Drosophila melanogaster*. *Journal of Genetics* 93, 103-112.
10. Kalra B, Parkash R, **Aggarwal DD** (2013). Divergent mechanisms for water conservation in *Drosophila* species. *Entomologia experimentalis et applicate* 151, 43-56.

11. Parkash R, **Aggarwal DD*** (2012) Trade-off of energy metabolites as well as body color phenotypes for starvation and desiccation resistance in montane populations of *Drosophila melanogaster*. *Comparative Biochemistry and Physiology, Part A Molecular and integrated physiology* 161: 102-113. **(Corresponding author)**
12. Parkash R, **Aggarwal DD**, Kalra B (2012) Coadapted changes in energy metabolites and body color phenotypes for resistance to starvation and desiccation in latitudinal populations of *D. melanogaster*. *Evolutionary Ecology* 26: 149-169.
13. Parkash R, Ramniwas S, Kajla B, **Aggarwal DD** (2012). Divergence of desiccation-related traits in two *Drosophila* species of *takahashi* subgroup from western Himalayas. *The Journal of Experimental Biology* 215: 2181-2191.
14. Parkash R, **Aggarwal DD**, Ranga P, Singh D (2012). Divergence of larval resource acquisition for water conservation and starvation resistance in *Drosophila melanogaster*. *Journal of comparative physiology* B182: 625-640.
15. Parkash R, **Aggarwal DD**, Ranga P, Singh D (2012). Divergent strategies for adaptation to desiccation stress in two *Drosophila* species of *immigrans* group. *Journal of comparative physiology* B182:751-769.
16. Parkash R, **Aggarwal DD**, Singh D, Lamboder C, Ranga P (2012). Divergence of water balance mechanisms in two sibling species (*Drosophila simulans* and *D. melanogaster*): effects of growth temperatures. *Journal of comparative physiology* B183:359–378.
17. Parkash R, **Aggarwal DD***, Kalra B, Ranga P (2011). Divergence of water balance mechanisms in two melanic *Drosophila* species from the western Himalayas. *Comparative Biochemistry and Physiology A, Molecular and integrated physiology*. 158: 531-541. **(Corresponding author)**.

Conference Organization/ Presentations

1. Frontiers in Genetics 1X Israel (Poster presentation), **Aggarwal DD**, Rashkovetsky E, Michalak P, Cohen I, Ronin Y, Zhou D, Haddad GG, Korol AB (2015). Experimental evolution of recombination and crossover interference in *Drosophila* caused by directional selection for stress-related traits.
2. Evolutionary Biology Meeting, Marseille, France: **Aggarwal DD**, Rashkovetsky E, Michalak P, Zhou D, Haddad GG, Korol AB (2014). Increased recombination is caused by directional selection of stress-related traits in *Drosophila melanogaster*.
3. Evolution 2010, USA (Poster presentation). **Aggarwal DD**, Parkash R, Dev K, Kalra B (2010) Climatic stress adaptations in *Drosophila melanogaster* along a latitudinal transect: Analysis of genetic and plastic effects, P1069, Evolution, June 25-29, USA.
4. Evolution 2010, USA (Poster presentation). Kalra B, Parkash R, **Aggarwal DD** (2010) Changes in cuticular lipids, water loss and desiccation resistance in a tropical drosophilid: Analysis of within population variation. P2068 Evolution, June 25-29, USA.

5. Recent trends in animal physiology (Poster presentation). Kalra B, Parkash R, **Aggarwal DD** (2009) Impact of body melanisation on contrasting levels of desiccation resistance in *D. melanogaster*-a generalist and *D. ananassae*- a circumtropical species, October 29th – 30th University of Mysore, India

Awards and Distinctions

- Seal of Excellence, Marie Skłodowska-Curie project (H2020), European Association 2019.
- Seal of Excellence, Marie Skłodowska-Curie project (H2020), European Association 2018.
- Travel grant for attending Marie Skłodowska-Curie proposal writing workshop at Aarhus University (May, 2017) - funded by Aarhus University, Denmark.
- FFG travel grant (funded by European Commission) to visit Institute of population genetics, Vetmeduni Vienna, 2016.
- PBC VATAT (Israel), 2012.
- CSIR-NET-JRF award 2007.

Association With Professional Bodies

Life Membership: Genetics society of Israel, Israel

Served as peer reviewer for:

- Molecular Ecology
- Proceedings Royal Society London B
- PLoS One
- The Journal of Experimental Biology (Oxford)
- Comparative Biochemistry and Physiology A
- Insect Science
- Current Science
- Proceedings Indian National Science Academy

(Signature of Faculty Member)

(Signature & Stamp of Head of the Department)

निर्माणाध्यक्ष/Head
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