

## Unit Name

Biological Physics Theory Unit

## Scholarly Contributions and Creative Productions (by Faculty)

### Journal Article

1. Costa, A. C.; Costa, A.; Ahamed, T.; Jordan, D.; Stephens, G. J.; Stephens, G.  
A Markovian Dynamics for Caenorhabditis Elegans Behavior across Scales. Proceedings of the National Academy of Sciences of the United States of America 2024, 121.
2. Rozemuller, W. M.; Werner, S.; Costa, A. C.; O'Shaughnessy, L.; Stephens, G. J.; Shimizu, T. S.  
Statistics of C. Elegans Turning Behavior Reveals Optimality under Biasing Constraints. 2024.
3. O'Shaughnessy, L.; Izawa, T.; Masai, I.; Shaevitz, J. W.; Stephens, G. J.  
Dynamics of Dominance in Interacting Zebrafish. PRX Life 2 2024.

### Presentation at Conference

1. O'Shaughnessy, L.; Izawa, T.; Masai, I.; Shaevitz, J. W.; Stephens, G. J.  
Dynamics of Dominance: Maneuvers, Contests, and Assessment in the Posture-Scale Movements of Interacting Zebrafish.. 18th International Zebrafish Conference (IZFC) 2024.
2. Stephens, G. J.  
Plenty of Room at the Top: Towards a "Physics of Behavior." Cracking the Olfactory Code 2024.

## Scholarly Contributions (For Unit Members Only)

Name of Unit Member (Author-Presenter)	Type	Title	Publisher
Kosmas Deligkaris	Journal Article	Particle Swarm Optimization and Random Search for Convolutional Neural Architecture Search	IEEE
Irina Korshok	Poster Presentation at Conference	The segment length dynamics of crawling behavior in D. melanogaster larvae	The Short Course on the Application of Machine Learning for Automated Quantification of Behavior
Makoto Hiroi	Poster Presentation at Conference	Internal models in Sepiotheutis lessonana during prey hunting.	
Kosmas Deligkaris	Presentation at Conference	High-Throughput Quantification of 3D Posture-Scale Animal Social Behavior	IEEE World Congress on Computational Intelligence, Workshop on Computational Intelligence Application
Kosmas Deligkaris	Presentation at Conference	Evaluation of Particle Swarm Optimization as a Neural Architecture	IEEE World Congress on Computational Intelligence,

Name of Unit Member (Author-Presenter)	Type	Title	Publisher
		Search Strategy for Chain-Structured Convolutional Neural Networks	Workshop on Computational Intelligence Application
Irina Korshok	Presentation at Conference	Posture dynamics of crawling behavior in <i>D. melanogaster</i> larvae	APS March Meeting 2025
Irina Korshok	Seminars	Workshop: Physics of behavior: posture, trajectories and embedding, models	The Short Course on the Application of Machine Learning for Automated Quantification of Behavior
Tatsuo Izawa	Seminars	Quantifying the social behavior of zebrafish in 3D	Osaka Medical and Pharmaceutical University

### ***Honors, Awards & Fellowships***

2022-09-01 - Ongoing	Fellowship of the American Physical Society, Fellowship of the American Physical Society, 2022, American Physical Society
1990 - Ongoing	Phi Beta Kappa; Distinguished Graduating Senior, Physics Department, , 1990, Phi Beta Kappa & Ohio University

### ***External Service***

2024	APS-DBIO Early Career Award Committee, American Physical Society Division of Biological Physics, I was chair of the committee charged with determining the recipient. This award recognizes outstanding and sustained contributions by an early-career researcher to biological physics. The APS Division of Biological Physics presents the award annually, consisting of \$2,000, a certificate, a travel reimbursement of up to \$1,000 for US domestic or \$1,500 for international travel, and a registration waiver to receive the award and give an invited talk at the APS March Meeting.
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### ***Other Institutional Service***

2012 - Ongoing	Institute Tea, (University)
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