The evolution and implications of fitness-associated genetic mixing - a theoretical study

Fact Sheet

Project Information

FAGM

Grant agreement ID: 224866

Project closed

Start date
1 February 2009

End date
31 May 2013

Funded under
Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Total cost
€ 100 000,00

EU contribution
€ 100 000,00

Coordinated by
TEL AVIV UNIVERSITY
Israel

Objective

Mixing of genetic material coming from different individuals is central for the generation of new genetic combinations, and plays a major role in evolution. Most evolutionary models implicitly assume that genetic mixing has a uniform rate at all times. In contrast, this research will investigate an alternative hypothesis: that genetic

mixing is plastic, its rate depending on the state of the organism, so that less fit individuals have a higher tendency for mixing. The research will concentrate on three mechanisms of mixing: sexual reproduction, outcrossing and dispersal. The investigator will develop and analyze mathematical models and simulations of fitness associated mixing, in order to identify conditions favoring the evolution of fitness associated mixing, and to predict its implications for adaptation. This research is a necessary step towards understanding the evolutionary basis and the implications of plastic genetic variation. By improving our understanding of the way genetic variation acts and evolves, the results of this research will affect many evolutionary and ecological models, and guide future experimental efforts. In addition to its direct theoretical significance, it would improve our understanding of how populations react to a changing environment – an issue of critical importance in conservation biology. It may also provide new insights regarding the accelerated evolution of drug resistant pathogen strains in response to successful drug treatment.

Fields of science (EuroSciVoc)

natural sciences > mathematics > applied mathematics > **mathematical model**

Keywords

Evolution of Sex | Evolutionary theory | Genetic Mixing | Genetic Variation | Population genetics | Recombination

Programme(s)

FP7-PEOPLE - Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Topic(s)

PEOPLE-2007-4-3.IRG - Marie Curie Action: "International Reintegration Grants"

Call for proposal

FP7-PEOPLE-2007-4-3-IRG
See other projects for this call

Funding Scheme

MC-IRG - International Re-integration Grants (IRG)

Coordinator

TEL AVIV UNIVERSITY

EU contribution

€ 100 000,00

Total cost

No data

Address

RAMAT AVIV
69978 Tel Aviv
Israel

Activity type

Higher or Secondary Education Establishments

Links

Contact the organisation Website
Participation in EU R&I programmes
HORIZON collaboration network

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