



CDE international seminar (online)

1st: Mar 12th (Fri) 9-10am [Lang: English]

Dr. Gunter P. Wagner, Yale University

Contingent Evolvability and the Evolution of Body Shape

Click this URL for registration (free event)

<https://forms.gle/Ywokrw3Sn7N9BEkz5>

(Zoom URL will be sent to you based on the registered information)

For all of you who are interested in Evolutionary Biology

We are happy to announce open, online international seminar provided by the research project "Constrained and Directional Evolution" (led by Dr. Shigeru Kuratani).

The aim of this open seminar is to share and discuss over the challenging topics in evolutionary biology, such as Evolvability, Constraints, Directionality in phenotypic evolution etc., and to boost interactions between scientists interested in these topics. It's an open seminar with participation free of charge, and we welcome your participation (Students, Postdocs, Pls etc.)

[Greeting from the chair of this project]

How much has our understanding of biological evolution improved in the past half century? Not even the shape of the tiny insect in front of us now can be satisfactorily explained. My understanding of evolution has not changed much since then. I do not think it's the way it should be. it's good enough. At last, it's time we start doing something to solve the mystery.

Why should the shapes of plants and animals be the way they are? How does purposefulness explain the process of these refinement of shapes? This project aims to construct a new theoretical system of evolutionary biology by not only encompassing natural selection and neutral theories but also integrating essential elements that previous theories failed to address. We hope that this attempt will provide a place for gathering bold challengers, and further leads to a new trend in the field of evolutionary biology.

<http://constrained-evo.org/greeting.html>

進化にご興味のある全ての皆様へ

新学術領域「進化制約方向性（倉谷代表）」

公開オンラインセミナーのお知らせです。

表現型進化の方向性、拘束、進化可能性

といった概念や問題について、

考え、議論したり新たな考えや

人の相互作用をもたらすための

不定期で行う国際オンラインセミナーです

(公開。参加費無料)。

フランクなオンラインミーティングです。

大学院生の方々も

広くご参加いただけましたら幸いです。

近くに興味を持たれそうな方がおられましたら

お声がけいただけると幸いです。

- Abstract -

While the question of evolvability has occupied the attention of the pioneers of evolutionary biology, most notably C. Darwin and R. A. Fisher, this issue was not much addressed in the research programs of evolutionary biology up to the end of the 20th century. That changed to some degree with the advent of branches of computer science and engineering utilizing evolutionary principles, such as evolutionary algorithm, evolutionary programming and evolutionary optimization. With these developments it became obvious that evolvability is not a primitive property of any replicating system but requires certain organizational properties to work. Hence the question arose, how organisms acquire the ability to evolve in response to natural selection? There are two broad groups of answers: models of adaptive evolvability, and models of contingent evolvability. Models of adaptive evolvability assume that natural selection is directly selecting evolvability enhancing features because of their effect on evolvability. In contrast, according to models of contingent evolvability, changes in evolvability are secondary to other evolutionary changes.

In my talk I will briefly explain why adaptive model of evolvability are likely not feasible. This leaves us with contingent evolvability and I will discuss models of evolvability based on intrinsic developmental tendencies, like the well documented correlation between the mean and the variance of quantitative characters. Accepting this form of contingent evolvability as a starting point I will discuss how patterns of mean-variance coupling can influence the evolution of body shapes in teleosts and salamanders. Overall, these examples suggest that researchers need to pay more attention to empirical patterns of variability and how they relate to and may be explain large scale patterns of body shape evolution.

[領域代表より、抜粋] (原文はHPをご覧ください)

過去半世紀の間、生物の進化についての私たちの理解はどれほど深まったろうか。いま目の前にいるちっぽけな虫のかたちすら満足に説明してくれない。進化に関する私の理解はあの頃とあまり変わってはいない。さりとして、このままでよいとも思わない。いよいよ謎を解くべく、何かを始めなければならぬ。

動植物のかたちがなぜこのようなものでなければならぬのか、そしてそれが洗練されて行く過程にどのように合目的性が入り込むのか、自然選択説や中立説を包含するのみならず、それらが扱うことのできなかつた本質的要素を統合することを通じ、本領域は進化生物学の新たな理論体系の構築を目標とする。この試み自体、進化生物学領域における梁山泊であり、自ら新たな潮流となり、進化研究を変える第一歩ならんと欲するものである。

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