cases	doc_1	
	authors	• A M Dean
	title	Fitness, flux and phantoms in temporally variable environments
	publication_date	1994-01-01 00:00:00
	source	SupportedSources.INTERNET_ARCHIVE
	journal	The Genetics Society of America
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	doi	
	urls	• https://web.archive.org/web/20200206175811/http://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC1205927&blobtype=pdf • https://archive.org/details/sim_genetics_1994-04_136_4/page/1481
	id	id-1915114759998290060
	abstract	The evolutionary problem of selection in temporally variable environments is addressed by investigating a metabolic model describing the approach to steady state of a flux emanating from a simple linear pathway of unsaturated enzymes catalyzing reversible monomolecular reactions. Analysis confirms previous claims that steps having no influence on the steady state flux may influence transient behavior, and that enzymes immune to natural selection at steady state may become subject to selection when fitness is a function of individual transient metabolic events. Indeed, calculations show that the beta-galactosidase of Escherichia coli, which exerts a negligible effect on the steady state lactose flux, controls the approach to steady state. However, after 6 sec the lactose flux is within 0.1% of steady state, and so an ever changing environment must be invoked to continually expose beta-galactosidase to selection. Analysis of the metabolic model undergoing multiple transient events reveals that fitness differences remain unaffected if enzyme activities remain constant and become minimized if enzyme activities differ among environments. Until suitable data become available, claims that metabolic behavior away from steady state necessarily exposes a far greater proportion of allozymes to natural selection should be treated with great skepticism.
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doc_2	
authors	• A M Dean
title	Fitness, flux and phantoms in temporally variable environments
publication_date	1994-04-01 00:00:00
source	SupportedSources.INTERNET_ARCHIVE
journal	Oxford University Press (OUP)
volume	
doi	10.1093/genetics/136.4.1481
urls	• https://web.archive.org/web/20210123085010/https://watermark.silverchair.com/genetics1481.pdf?token=AQECAHi208BE49Ooan9kkhW_Ercy7Dm3ZL_9Cf3qfKAc485ysgAAArcwggKzBgkqhkiG9w0BBwagggKkMIICoAIBADCCApkGCSqGSIb3DQEHATAeBglghkgBZQMEAS4wEQQM3WQXCRw8ZlynLFQ9AgEQgIICau5Yl8XBZ3aGm5PFGDtgYlDSjdMYi9-LfTpLijqvjB10bne7plIoVv5v6PFgdkMb9vefl9y4CM50thcI31zKemwHRgNt2QCA4N8YeWon2GxNXzII6_uZ_-FSMSGnokzGCSuTd91twQFXFUqj9C-PQMB-WujsRy_2L8QPM_1zQ9VNzrTze60yd4TAdaoqmIdnvA9P5jUtVn4OR_-re71CciCieagjOFRyjZ1v3sSjTjmOvfcq77EZde0VrlOVilRd0sdDuZuZdn_CEzGG9oJCRCvYpwCXcfEC0L5WKQoZwZ8V1Ed2jv_h2UnflwItPatPmJIiloy1NtvkYgJt_1GRDDF4guyC3_vk9iUyXgY_y28B3ynzWS5UMlJ9PY8UXBEPSwiAyGuXYR6rItZrw4RtcMUBbnUX8UQnvNGAf84hBxEYvyOiU8EHykoDiso942747F4RK8BsIImzJLcB5JiZNlhVOAIlv7Qv6lnLOSZByBy_N3Jeb7MCRsak2dI6yTf6D3w6uMoCiVEji7Hx18jbGHcbP3unNelH-mTSVmmhPT2THGghsAJFqM4NdIDLAyD1dHfdoc_en0AuqU41cTwURfL9dKc7iD_efPyYbDgif7w608
id	id-8810042752217256130
abstract	The evolutionary problem of selection in temporally variable environments is addressed by investigating a metabolic model describing the approach to steady state of a flux emanating from a simple linear pathway of unsaturated enzymes catalyzing reversible monomolecular reactions. Analysis confirms previous claims that steps having no influence on the steady state flux may influence transient behavior, and that enzymes immune to natural selection at steady state may become subject to selection when fitness is a function of individual transient metabolic events. Indeed, calculations show that the beta-galactosidase of Escherichia coli, which exerts a negligible effect on the steady state lactose flux, controls the approach to steady state. However, after 6 sec the lactose flux is within 0.1% of steady state, and so an ever changing environment must be invoked to continually expose beta-galactosidase to selection. Analysis of the metabolic model undergoing multiple transient events reveals that fitness differences remain unaffected if enzyme activities remain constant and become minimized if enzyme activities differ among environments. Until suitable data become available, claims that metabolic behavior away from steady state necessarily e
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