

**NEW MATHEMATICAL MODELS "NOVOBIO" FOR THE BIOSYNTHESIS OF USEFUL PRODUCTS IS THE WAY TO IMPROVE THE EFFICIENCY OF FERMENTATION**

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We have proposed new mathematical models "NovoBio" based on age population structure of microorganisms.

These models are developed both for batch and continuous fermentation united on Integrated Model of Development (IMD): Unstructured Model (USM), Structured Model (SM) and Metabolite Model (MM) - and a Model of Continuous Cultivation (MCC). All of these models allows precisely calculate, predict and improve the productivity of any fermentation process. With a high degree of accuracy "NovoBio" models allow to estimate maximum efficiency of strain, optimal duration of cultivation and the valuable metabolite yield. Estimation of age population structure enables to assess the impact of all the relevant factors (medium composition, physical and chemical parameters of the process, etc.) in order to maximize economic efficiency. An important feature of a new biotechnological models "NovoBio" is their versatility. These models can be applied both for eukaryotic microorganisms fermentation and prokaryotic microorganisms including recombinant strains and regardless of the objective of cultivation, whether getting maximum yield of biomass or valuable metabolite.