

# Clonal Dynamics Modeled by Multitype Age-Dependent Branching Processes with Non-Homogeneous Immigration

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Branching processes with immigration were introduced by Sevastyanov (1957) who studied a single-type Markov branching process with an immigration component formulated as a time-homogeneous Poisson process [1]. Extensions of this process have since been extensively studied [2, 3] and found numerous applications, particularly in cell and molecular biology. In this talk, we consider a class of age-dependent branching processes with non-homogeneous immigration. We focus on properties of these models including intra-clonal evolution and the dynamics of clonal dominance. The practical relevance of these properties is discussed along in the context of multitype biological systems. This is joint work with Dr. Nikolay Yanev.

## References

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- [3] Durham, S.D. (1971). A problem concerning generalized age-dependent branching processes with immigration. *Ann. Math. Statist.*, 42, 1121-1123.