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# A standard for dividing labor in systems medicine

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## Abstract

Session: Philosophical perspectives on and from systems biology (Rogier De Langhe & Olaf Wolkenhauer, Sara Green, Robert C. Richardson and Fred Boogerd)

There is increasing evidence that systems medicine will be required to deal simultaneously with subcellular, cellular and tissue level phenomena in order to explain how biological function at the tissue, organ or whole organism level emerges from the interactions of molecules and cells. Systems medicine arises from the coming together of large-scale data analysis and high-level network modeling using bioinformatics approaches and few-variable mechanistic modeling using dynamical systems theory. The need for integration of these various types of models confronted biologists with an acute need for reflection on important philosophical questions concerning *scientific virtues* (can a single type of model maximize all virtues simultaneously?) and the *division of cognitive labor* (should all scientists work on the same type of model or should the community hedge its bets?). Richard Levins (1966) offered a glimpse of what such a framework might look like. In this joint paper by a systems biologist and a philosopher of science we extend this framework and apply it to systems medicine. Our aim is to provide a standard for dividing labor in systems medicine. Increased coordination on a common standard for dividing labor in systems medicine has the potential to lead to substantial gains in scientific productivity.

## REFERENCES

Levins, Richard (1966), "The Strategy of Model Building in Population Biology", American Scientist, 54, 421-31

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