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Sommario/riassunto	The understanding of biological complexity has been greatly facilitated by cross-disciplinary, holistic approaches that allow insights into the function and regulation of biological processes that cannot be captured by dissecting them into their individual components. In addition, the development of novel tools has dramatically increased our ability to interrogate information at the nucleic acid, protein and metabolite level. The integration and interpretation of disparate data sets, however, still remain a major challenge in systems biology. Roots provide an excellent model for studying physiological, developmental, and metabolic processes. The availability of genetic resources, along with sequenced genomes has allowed important discoveries in root biochemistry, development and function. Roots are transparent, allowing optical investigation of gene activity in individual cells and experimental manipulation. In addition, the predictable fate of cells emerging from the root meristem and the continuous development of roots throughout the life of the plant, which permits simultaneous observation of different developmental stages, provide ideal premises for the analysis of growth and differentiation. Moreover, a genetically fixed cellular organization allows for studying the utilization of

positional information and other non-cell-autonomous phenomena, which are of utmost importance in plant development. Although their ontogeny is largely invariant under standardized experimental conditions, roots possess an extraordinary capacity to respond to a plethora of environmental signals, resulting in distinct phenotypic readouts. This high phenotypic plasticity allows research into acclimative and adaptive strategies, the understanding of which is crucial for germplasm enhancement and crop improvement. With the aim of providing a current snapshot on the function and development of roots at the systems level, this Research Topic collated original research articles, methods articles, reviews, mini reviews and perspective, opinion and hypotheses articles that communicate breakthroughs in root biology, as well as recent advances in research technologies and data analysis.