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Recent studies have demonstrated that metabolic dysregulation is commonly involved in the development of various noncommunicable diseases, such as cardiovascular and metabolic diseases as well as cancer. For instance, diabetes is known to increase risks for heart failure and cancer in addition to coronary artery disease. Moreover, the changes in cell metabolism (metabolic remodeling) has been shown to be important for oncogenesis, cancer growth, and immune cell activation. These findings indicate that cell metabolism is closely linked with various cellular machinery. As such, metabolic dysregulation at the cell, tissue, and systemic levels would modulate homeostasis and promote pathologies. In this symposium, we will discuss the links between the metabolic network and other biological networks in the maintenance of homeostasis and the development of noncommunicable diseases. In particular, we will discuss as to how dysregulation of the metabolic network contributes to tissue dysfunction.