



among different tissues and organ systems. Thus, alterations in tissue-to-tissue or organ-to-organ communications, which are under genetic regulation, can affect organismal homeostasis, and consequently impact the aging process. One of the organ systems that play a major role in maintaining homeostasis is the nervous system. Considering that the nervous system includes the sensory system, which perceives the complexity of an animal's environment, it should be no surprise that there would be a sensory influence on homeostasis and aging. To promote homeostasis, any given sensory information is transmitted through short-range signals via neural circuits and/or through long-range endocrine signals to target tissues, which may in turn be neuronal or non-neuronal in nature. At the same time, since homeostasis involves a number of feedback mechanisms, non-neuronal tissues can also modulate sensory and other neuronal functions. Several genes that regulate signaling pathways known to affect homeostasis and aging have been shown to act in neurons, in tissues that are likely downstream targets of the nervous system, or through feedback regulation of neuronal activities. These genes can have different temporal requirements: some might function early, e.g., by affecting neural development, while others may only be required later in adulthood. Some well-known examples of genes involved in the neuronal regulation of homeostasis and longevity encode components of the evolutionarily conserved nutrient-sensing insulin/insulin-like signaling pathway, the stress-sensing internal repair system, and the mitochondrial electron transport chain. Indeed, the genetic perturbation of these pathways has been found to lead to numerous diseases, many of which are age-related and involve the nervous system, such as neurodegeneration and the metabolic syndrome. Despite much progress, however, many aspects of the neuronal inputs and outputs that affect aging and longevity are poorly understood to date. For example, the precise neuronal and non-neuronal circuitries and the details of the molecular mechanisms through which genes/signaling pathways maintain homeostasis and affect aging in response to the environment remain to be elucidated. Similarly, it is presently unclear whether genes that regulate the early development of the nervous system and its consequent circuitry influence homeostasis and longevity during adulthood. At the same time, although many genes affecting aging are conserved, both the nervous system and the aging process are highly variable within populations and among taxa. Accordingly, the role of natural genetic variation in shaping the neurobiology of aging is also presently unknown. The aim of this Research Topic is therefore to highlight the genetic, developmental, and physiological aspects of the signaling networks that mediate the neuronal inputs and outputs that are required to maintain organismal homeostasis. The elucidation of the effects of these neuronal activities on homeostasis may thus provide much-needed insight into mechanisms that affect aging and longevity.

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Die Analyse eines Verkehrsunfalls erfordert zusätzliches Wissen, das im Normalfall nicht während des Studiums vermittelt wird. Daher wird die Analyse von Verkehrsunfällen in der Regel von spezialisierten Sachverständigen vorgenommen. Das dazu nötige Wissen wurde Anfang der 80er Jahre bereits in einer früheren Auflage

dieses Handbuchs veröffentlicht. Das Autorenteam besteht aus Experten auf ihrem jeweiligen Gebiet und stellt die Arbeitsmittel in zeitgemäßer Darstellung bereit. Dabei werden computergestützte Arbeitsmethoden berücksichtigt. Die zweite Auflage des Buches wurde um einen Abschnitt über Leitplanken ergänzt. Neben den technischen Spezifikationen und der Projektierung fanden besonders die Bauarten für Motorradfahrer und die Testsimulation Beachtung.

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