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Sommario/riassunto

Thyroid hormone signaling has been known for a long time to be required for proper neurodevelopment and the maintenance of cognitive functions in the adult brain. As thyroid hormone excess or deficiency is usually well handled by clinicians, research dedicated to the neural function of thyroid hormone, have not been a priority within the field. This is changing mainly for two reasons. First, new genetic diseases have been discovered, altering thyroid hormone signaling in brain (THRA, MCT8, SBP2), with neurodevelopmental consequences which are currently incurable. Second, there is a growing concern that exposition of the general population to environmental chemicals able to interfere with thyroid hormone signaling compromises children neurodevelopment or induces central disorders in adults. Finally thyroid hormone is acting directly on gene transcription, by binding nuclear receptors, and therefore is an interesting entry point to identify genetic programs controlling brain development and function. Reaching a broad understanding of the multiple processes involving thyroid hormone in brain is a tremendous task which will necessitate a multidisciplinary approach: animal genetics, molecular biology, brain imaging, developmental biology, genomics, etc... This topic will be the occasion to combine recent contributions in the field and to identify priorities for future investigations. Due to devastating consequences of congenital hypothyroidism, the neurodevelopmental consequences of altered thyroid hormone signaling have been extensively studied over

the years. The discovery of new genetic diseases, the concern about the possible neurotoxicity of environmental thyroid hormone disruptors, recently renewed the interest for an important research field. This Ebook gathers reviews and original data from experts in various disciplines. It provides a broad view of ongoing research and outlines key issues for future investigation.