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Julia T Upton* (uptonj@husson.edu), Husson University, School of Science and Humanities,
One College Circle, Bangor, ME 04401. *Turing Machines and Quantum Computation: Building a
Quantum Brain.*

The rapidly developing field of Quantum Computation has benefited from Alan Turing's ideas, yet it also poses the most serious challenge to the strong Church-Turing thesis. The impact of Alan Turing's ideas on the field of Quantum Computation is explored. The role of a Quantum Turing Machine, a generalization of the classical probabilistic and deterministic Turing machines, is examined. The notions of the computable, uncomputable, and an oracle are discussed within the framework of Quantum Computation. (Received July 28, 2011)