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The role of cellular lipid droplets in rotavirus replication: Compounds disturbing lipid droplet homeostasis decrease rotavirus replication

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Rotaviruses (RVs) are a major cause of severe gastroenteritis in infants and young children worldwide. Rotavirus-associated disease is associated with a mortality of >200,000 children/annum. Rotavirus vaccines licensed since 2006 have significantly decreased RV-associated disease and mortality, however with variable efficacy. The molecular biology of RV replication is well studied. Recently, the interaction of viroplasms (cytoplasmic inclusion bodies in which RV RNA replication and early morphogenesis take place) with the cellular organelles lipid droplets (LDs) has been discovered. Viroplasms recruit LDs early during viral replication. Compounds disturbing LD homeostasis (in non-toxic concentrations), such as inhibitors of fatty acid biosynthesis (TOFA, C75 and Triacsin C) or compounds eliciting lipolysis (isoproterenol+IBMX), inhibit RV replication by 4-6-fold (viral RNA replication) and 20-50-fold (infectivity of viral progeny). Compounds disturbing LD homeostasis may have the potential to become antivirals.

Biography

Ulrich Desselberger is the Professor in the Department of Medicine, University of Cambridge, UK. He is having above 100 publications in peer review journals.

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