Table 5: Summary of experimental data sets used in fitting the model; see text for additional references

|  |  |  |
| --- | --- | --- |
| Process | Ref | Experimental System |
| insulin binding, PI3K activation, GLUT4 translocation | Stagsted 1993 [1] | rat adipocytes |
| Inhibition of PTPs | Mahadev et al [2, 3] | 3T3-L1 adipocyte-like cells derived from mouse fibroblasts |
| reactivation of PTPs | Lee 1998, [4] | A431 cells (human epidermal carcinoma) |
| Inhibition of PTEN | Lee 2002 [5]; Seo et al 2005[6]. | 3T3 cells and HeLa cells (Lee); human neuroblastoma cells (Seo) |
| ROS transport | Adimora 2010  [7] | Jurkat T cells (human T lymphocytes) |
| IRS Serine phosphorylation, synthesis and degradation | Greene 2003 [8] | H4IIE cells (rat hepatoma) |
| FOXO mediated control of antioxidants | Ambrogini 2010 [9] | mouse osteoblasts |
| interaction of Insulin and hydrogen peroxide | Archuleta, 2009 [10] | Zucker rat skeletal muscle |
| Activation of JNK and IKK by ROS | Bloch-Damti, 2006 [11] | Fao cells (rat hepatoma) |
| IRS threonine phosphorylation | Cedersund, 2008 #227 [12] | Human adipocytes |
| oxidative stress/JNK action on FOXO localisation and transcription | Essers, 2004 [13] | DLD1 (human colon carcinoma); also A14 (3T3 overexpressing InR/ C2C12 (mouse muscle) |
| Circadian variation of physiological insulin | Frayn 1996 [14] | human; entire organism |
| FOXO mediated control of SOD2 | Kops, 2002[15] | DL23 cells (derived from DLD1, human colon carcinoma) |
| FOXO mediated control of InR | Liu, 2007 [16] | rat cardiomyocytes |

The parameters below relate to the FOXO-part of the model , which was developed previously [17] and not refitted here

|  |  |  |
| --- | --- | --- |
| process | Ref | experimental system |
| Akt-mediated phosphorylation of FOXO | Brunet 1999[18] | CCL39 (Chinese hamster lung) fibroblasts |
| JNK-mediated phosphorylation and transport of FOXO4 | Kops 2002 [15] | DL23 cells (related to DLD-1 human colon carcinoma) |
| IKK-mediated phosphorylation and degradation of FOXO | Hu et al. [19] | 293T and MCF-7 cells |
| Akt-phosphorylation altering transport | Biggs 1999 [20] | in CV1 African green monkey kidney fibroblasts |
| Akt-mediated degradation | Matsuzaki 2003[21]) | HepG2 human liver carcinoma cells |

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