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Spatio-temporal framework for integrative analysis of zebrafish development studies

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References

DAG-Edit: <http://amigo.geneontology.org/dev/java/dagedit/docs/index.html>

Distributed Annotation System (DAS): <http://biodas.org/>

Developmental Anatomy Ontology of Zebrafish (DAOZ):

ENSEMBL: <http://www.ensembl.org/>

GEMS Search:

- Using anatomy concepts: <https://bio-imaging.liacs.nl/gems/jsp/CombinatorialSearch.jsp>
- Using gene information: <https://bio-imaging.liacs.nl/gems/jsp/SearchImages.jsp>

Java Server Pages (JSP): <http://java.sun.com/products/jsp/>

MySQL: <http://www.mysql.com/>

NCBI: <http://www.ncbi.nlm.nih.gov>

Open Biology Ontologies site, <http://obo.sourceforge.net/>

Portable network graphics (png): <http://www.w3.org/Graphics/PNG/>

PostgreSQL: <http://www.postgresql.org/>

The 3D atlas of zebrafish: <http://bio-imaging.liacs.nl/liacsatlas.html>

The Gene Expression Management System (GEMS): <http://bio-imaging.liacs.nl/gems/>

The Gene Ontology <http://geneontology.org>

Zebrafish Information Network (ZFIN): <http://zfin.org>

Agrawal, R., Imielinski, T. and Swami, A. Mining Association Rules between Sets of Items in Large Databases. Proc. of ACM SIGMOD, pages 207–216, May 1993.

Agrawal, R. and Ramakrishnan, S. Fast Algorithms for Mining Association Rules. Proceedings of the 20th VLDB Conference Santiago, Chile, 1994.

Baldock, R. and Burger, A. Anatomical ontology: names and places in biology. *Genome Biology*, 6:108, 2005.

Bard, J. B. L., Rhee, S. Y. and Ashburner, M. An ontology for cell types. *Genome Biology*, 6:R21, 2005.

Basset, D. E., Eisen, M.B., Boguski, M.S. Gene expression informatics – it’s all in your mine, *Nature Genetics supplement*, Vol. 21, Jan. 1999, 51-55.

Bei, Y., Belmamoune, M. and Verbeek, F. J. “Ontology and image semantics in multimodal imaging: submission and retrieval”, Proc. of SPIE Internet Imaging VII, Vol. 6061, 60610C1 C12, 2006.

Bathoorn, R. and Siebes, A.J.P.M. Constructing (Almost) Phylogenetic Trees from Developmental Sequences Data. In J.-F. Boulicaut, F. Esposito, F. Giannotti & D. Pedreschi (Eds.), *Proceedings of the 8th European Conference on Principles and Practice of Knowledge Discovery in Databases (PKDD)* (pp. 500-502). Springer-Verlag, 2004.

Bathoorn, R., Welten, M.C.M., Siebes, A.J.P.M., Richardson, M.K. and Verbeek, F.J. Limb - fin heterochrony: a case study analysis of molecular and morphological characters using frequent episode mining. (Submitted for publication)

Belmamoune, M. and Verbeek, F. J. Heterogeneous Information Systems: bridging the gap of time and space. Management and retrieval of spatio-temporal Gene Expression data. In: InSCit2006 (Ed. Vicente P. Guerrero-Bote), Volume I "Current Research in Information Sciences and Technologies. Multidisciplinary approaches to global information systems", pp 53-58, 2006.

Belmamoune, M. and Verbeek, F. J. Mining zebrafish 3D patterns of gene expression. (Submitted for publication, 2009).

Belmamoune, M. and Verbeek, F.J. Data Integration for Spatio-Temporal Patterns of Gene Expression of Zebrafish development: the GEMS database. *Journal of Integrative Bioinformatics*, 5(2):92, 2008.

Belmamoune, M. and Verbeek, F.J. Developmental Anatomy Ontology of Zebrafish: an Integrative semantic framework. *Journal of Integrative Bioinformatics*, 4(3):65, 2007. Online Journal: http://journal.imbio.de/index.php?paper_id=65.

Belmamoune, M., Lindoorn, E. and Verbeek, F. J. 3D-VisQuS: A 3D Visual Query System integrating semantic and geometric models. In: InSCit2006 (Ed. Vicente P. Guerrero-Bote), Volume II "Current Research in Information Sciences and Technologies. Multidisciplinary approaches to global information systems", pp 401-405, 2006.

Boissonnat, J.D. Geometric structures for three-dimensional shape representation. *ACM Transactions on Graphics*, 3(4):266286, October 1984.

Brune, R.M., Bard, J.B., Dubreuil, C., Guest, E., Hill, W., Kaufman, M., Stark, M., Davidson, D. and Baldock, R.A. A three-dimensional model of the mouse at embryonic day 9. *Dev Biol* 1999, 216(2):457-468.

Camon, E., Margane, M., Barrel, D., Lee, V., Dimmer, E., Malsen, J., Binns, D., Harte, N., Lopez, R. and Apweiler, R. The Gene Ontology Annotation (GOA) Database: sharing knowledge in Uniprot with Gene Ontology. D262±D266 Nucleic Acids Research, Vol. 32, Database issue DOI:10.1093/nar/gkh021, 2004.

Christiansen, J.H., Yang, Y., Venkataraman, S., Richardson, L., Stevenson, P., Burton, N., Baldock, R.A. and Davidson, D.R. EMAGE: a spatial database of gene expression patterns during mouse embryo development. Nucleic Acids Res. 2006; 34:D637–D641.

Gene Ontology Consortium. The Gene Ontology (GO) project in 2006. D322–D326 Nucleic Acids Research, 2006, Vol. 34, Database issue.

Gkoutos, G.V., Green, E.C.J., Mallon, A., Hancock, J.M., Davidson, D. Using Ontologies to describe mouse phenotypes. Genome Biology, 6:R8, 2005.

Grumblin, G., Strelets, V. FlyBase: anatomical data, images and queries. Nucleic Acids Res. 2006;34:D484–D488.

Haendel, M. A., Neuhaus, F., Osumi-Sutherland, D. S., Mabee, P. M., Mejino, J. L. V., Mungall, C. J. and Smith, B. A preprint of the chapter 'Modelling Principles and Methodologies – Spatial Representation and Reasoning' in Albert Burger, Duncan Davidson and Richard Baldock (Editors): Anatomy Ontologies for Bioinformatics: Principles and Practice.

Henrich, T., Ramialison, M., Wittbrodt, B., Assouline, B., Bourrat, F., Berger, A., Himmelbauer, H., Sasaki, T., Shimizu, N., Shimizu, N., Westerfield, M., Kondoh, H. and Wittbrodt, J. MEPD: a resource for medaka gene expression patterns. Bioinformatics. 2005;21:3195–3197.

Isogai, S., Horiguchi, M. and Weinstein, B. M. The Vascular Anatomy of the Developing Zebrafish: An Atlas of Embryonic and Early Larval Development. *Developmental Biology* 230, 278–301 (2001) doi:10.1006/dbio.2000.9995

Kabli, S., Alia, A., Spaink, H.P., Verbeek, F.J., de Groot, H.J.M. Magnetic Resonance Microscopy of the Adult Zebrafish. *Zebrafish* (2006), Vol 3., #4, pp 431 - 439

Kimmel, C. B., Kimmel, S. R., Ullmann, B., Schilling, T. F. and Ballard, W. W. Stages of embryonic development of the zebrafish. *Dev Dyn* 203, 3, 253-310, 1995.

Lee, C., Chen, M. and Lin, C. Progressive Partition Miner: An Efficient Algorithm for Mining General Temporal Association Rules. *IEEE Transactions on Knowledge and Data Engineering*, vol. 15, no. 4, pp. 1004-1017, Jul/Aug, 2003.

Lenzerini, M. "Data Integration: A Theoretical Perspective". *PODS 2002*: 233-246

Luger, S., Aitken, J.S., Webber, B.L. Cross-species Mapping between Anatomical Ontologies Based on Lexico-syntactic Properties. *ISMB-2004*. Poster C-40. S.F. Gilbert. (2006) *Developmental Biology*, Eighth Edition

Mennis, J. and Liu, J.W. Mining association rules in spatio-temporal data: an analysis of urban socioeconomic and land cover change. *Transactions in GIS* 9, 13-18, 2005.

Meuleman, W., Welten, M. C., Verbeek, F. J. Construction of correlation networks with explicit time-slices using time-lagged, variable interval standard and partial correlation coefficients. *Lecture Notes in Computer Science*. Volume 4216, *Computational Life Sciences II*, pp 236-246, 2006.

Patrick, J. Metonymic and Holonymic Roles and Emergent Properties in the SNOMED CT Ontology. *Advances in Ontologies*, M. Orgun & T. Meyer (Editors). *Proc of the Australasian Ontology Workshop (AOW 2006)*, Tasmania. 2006.

Richardson, M.K. et al. with Belmamoune, M., Bertens, L.F.M., Verbeek, F.J. (2009) Zebrafish development and regeneration: new tools for biomedical research. *Int. J. Dev. Biol.* (2009) 53: 835-850.

Ringwald, M., Baldock, R., Bard, J.B., Kaufman, M., Eppig, J.T., Richardson, J.E., Nadeau, J.H. and Davidson, D. A Database for Mouse Development. *Science* vol. 265, 30 September 1994.

Smith, B., Ceusters, W., Klagges, B., Köhler, J., Kumar, A., Lomax, J., Mungall, C., Neuhaus, F., Rector, A. L. and Rosse, C. Relations in biomedical ontologies. *Genome Biology*, 6:R46, 2005.

Sprague, J., Bayraktaroglu, L., Clements, D., Conlin, T., Fashena, D., Frazer, K., Haendel, M., Howe, D. G., Mani, P., Ramachandran, S., Schaper, K., Segerdell, E., Song, P., Sprunger, B., Taylor, S., van Slyke, C. E., and Westerfield, M. The Zebrafish Information Network: the zebrafish model organism database. *Nucleic Acids Research*, Vol. 34, Database issue D581 D585, 2006.

Verbeek, F. J. and Boon, P. J. High Resolution 3D Reconstruction from serial sections. *Microscope instrumentation, software design and its implementations. Proceedings SPIE 4621, Three Dimensional and Multi Dimensional Microscopy IX.* 65-76, 2002.

Verbeek, F. J., den Broeder, M. J., Boon, P. J., Buitendijk, B., Doerry, E., van Raaij, E. J. and Zivkovic, D. A standard atlas of zebrafish embryonic development for projection of experimental data. *Proceedings SPIE 3964, Internet Imaging: 242-252*, 2000.

Verbeek, F. J., Lawson, K. A. and Bard, J. B. L. *Developmental BioInformatics: linking genetic data to virtual embryos. Int.J.Dev.Biol.* 43, 761-771, 1999.

Verbeek, F.J. 3D reconstruction from serial sections, applications and limitations. *Microscopy and Analysis* 96-11, 33-35 1996.

Verbeek, F.J. and Boon, P.J. High resolution 3D-reconstruction from serial sections; microscope instrumentation, software design and its implementations. *Proceedings of SPIE* 4621, 65-76, 2002.

Verbeek, F.J. and Huijsmans, D.P. A Graphical database for 3D reconstruction supporting 4 different Geometrical Representations. In *Medical Image Databases*. S.T.C. Wong, ed. (Boston: Kluwer Academic Publishers), pp. 117-144, 1998.

Verbeek, F.J. Theory & Practice of 3D-reconstructions from serial sections. In *Image Processing, A Practical Approach*. R.A. Baldock and J. Graham, eds. (Oxford: Oxford University Press), pp. 153-195, 2000

Verbeek, F.J., Huijsmans, D.P., Baeten, R.W.A.M., Schoutsen, C.M., and Lamers, W.H. Design and implementation of a program for 3D-reconstruction from serial sections; a data driven approach. *Microscopy Research and Technique* 30, 496-512, 1995.

Welten, M. C. M., De Haan, S., Van den Boogert, N., Noordermeer, J. N., Lamers, G., Spaink, H. P., Meijer, A. H. and Verbeek, F. J. ZebraFISH: Fluorescent in situ hybridization protocol and 3D images of gene expression patterns. *Zebrafish*, Vol 3. #4, pp 465 – 4, 2006.

Welten, M.C.M., Sels, A., Van den Berg – Braak, M.I., Lamers, G.E.M., Spaink, H.P. and Verbeek, F.J. Expression analysis of the genes encoding 14-3-3 gamma and tau proteins using the 3D digital atlas of zebrafish development. 2009, SUBMITTED

Weninger, W.J. and Mohun, T. Phenotyping transgenic embryos: a rapid 3-D screening method based on episcopic fluorescence image capturing. *Nat Genet* 2002, 30(1):59-65.

