**Supplementary materials 1**

**COMPARATIVE SPECIES-SPECIFIC CHARACTERISTICS OF LIPIDS AND THEIR DYNAMICS DURING EMBRYOGENESIS AND EARLY POSTEMBRIONAL DEVELOPMENT OF ATLANTIC SALMON (SALMO SALAR L.) AND BROWN TROUT (SALMO TRUTTA L.)**

**Viktor P. Voronin, Svetlana A. Murzina, Svetlana N. Pekkoeva, Zinaida A. Nefedova,**

**Tatjana R. Ruokolainen, Michail A. Ruchiev, Nina N. Nemova**



а)



b)



c)

Incubation of Atlantic salmon (Salmo salar L.) and brown trout (Salmo trutta L.) eggs at the fish farm in Suistamo (Republic of Karelia). Authors: Efremov D.A., Ruch'ev M.A. a) Transfer of fertilized eggs to incubation trays; b) Embryonic development of Atlantic salmon (Salmo salar L.) and brown trout (Salmo trutta L.) under factory conditions; c) Avelin

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Correlation tables and correlograms of total lipids and lipid classes for Atlantic salmon (*Salmo salar* L.) and Brown trout (*Salmo trutta* L.) at different stages of embryonic and early postembryonic development

Graph Explanations: TL – total lipids, PL – phospholipids, DAG – diacylglycerol, Chol – cholesterol, FFA – free fatty acids, TAG – triacylglycerols, Sterol esters – sterol esters.

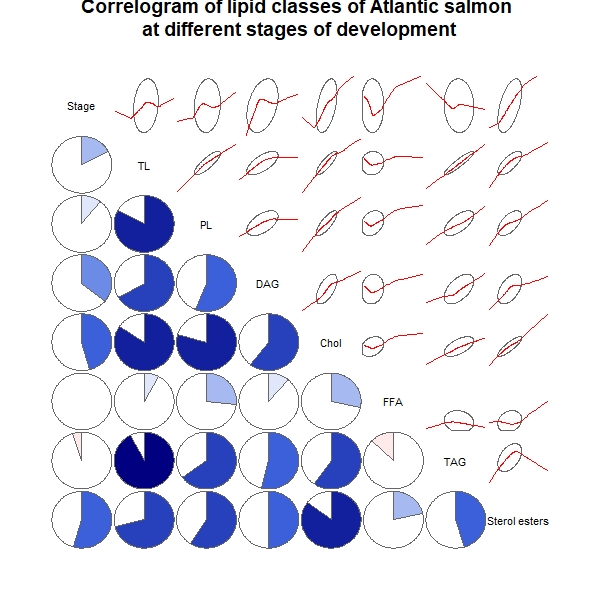
The lower left corner of the graph describes the correlations between the lipid components - the fill color (blue and red) and the direction of filling the “circle” (clockwise and counterclockwise) determine the direction of correlation (positive correlation and negative correlation, respectively). Color saturation indicates the degree of correlation (according to Pearson).

The upper right corner describes the distribution of lipid components (red line) and their confidence interval (ellipse).

Below the graph is a table of the correlation matrix with numerical values.

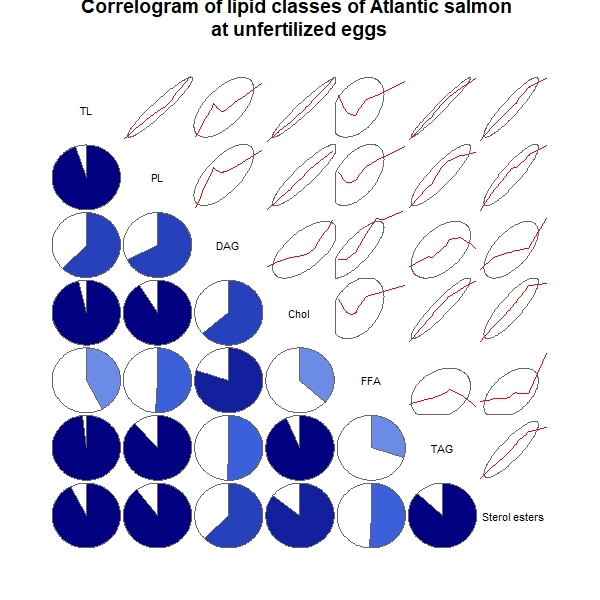
**Correlation tables and correlograms for Atlantic salmon (*Salmo salar* L.):**

1. General correlation for all stages of development



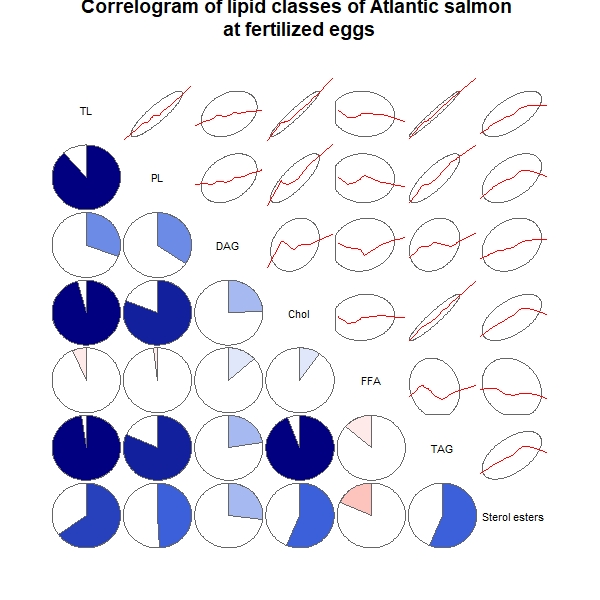
|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Stage | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| Stage | 1 | 0.1696 | 0.107 | 0.3591 | 0.4611 | -0.0009626 | -0.04809 | 0.5456 |
| TL | 0.1696 | 1 | 0.83 | 0.6642 | 0.8418 | 0.07791 | 0.9232 | 0.7116 |
| PL | 0.107 | 0.83 | 1 | 0.5596 | 0.7943 | 0.27 | 0.6453 | 0.5886 |
| DAG | 0.3591 | 0.6642 | 0.5596 | 1 | 0.6027 | 0.1133 | 0.5402 | 0.5024 |
| Chol | 0.4611 | 0.8418 | 0.7943 | 0.6027 | 1 | 0.2846 | 0.5956 | 0.8531 |
| FFA | -0.0009626 | 0.07791 | 0.27 | 0.1133 | 0.2846 | 1 | -0.1286 | 0.2161 |
| TAG | -0.04809 | 0.9232 | 0.6453 | 0.5402 | 0.5956 | -0.1286 | 1 | 0.4553 |
| Sterol esters | 0.5456 | 0.7116 | 0.5886 | 0.5024 | 0.8531 | 0.2161 | 0.4553 | 1 |

2. Correlation matrix for unfertilized eggs



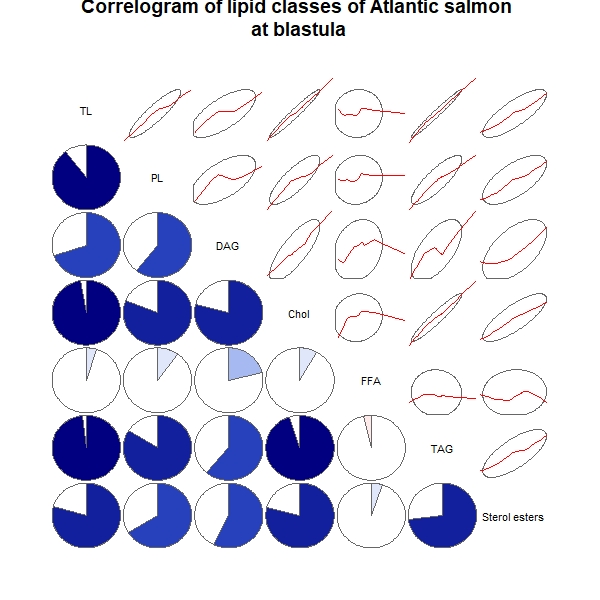
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.9495 | 0.6211 | 0.9636 | 0.4235 | 0.981 | 0.9228 |
| PL | 0.9495 | 1 | 0.6757 | 0.9118 | 0.511 | 0.8831 | 0.8951 |
| DAG | 0.6211 | 0.6757 | 1 | 0.6385 | 0.7977 | 0.5057 | 0.6226 |
| Chol | 0.9636 | 0.9118 | 0.6385 | 1 | 0.3688 | 0.9357 | 0.8539 |
| FFA | 0.4235 | 0.511 | 0.7977 | 0.3688 | 1 | 0.2999 | 0.5059 |
| TAG | 0.981 | 0.8831 | 0.5057 | 0.9357 | 0.2999 | 1 | 0.8695 |
| Sterol esters | 0.9228 | 0.8951 | 0.6226 | 0.8539 | 0.5059 | 0.8695 | 1 |

3. Correlation matrix for fertilized eggs



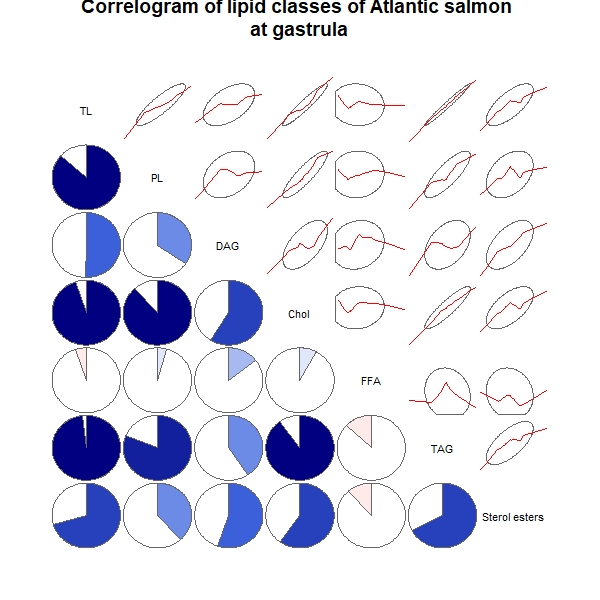
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.8868 | 0.3092 | 0.9589 | -0.06441 | 0.9798 | 0.6491 |
| PL | 0.8868 | 1 | 0.3468 | 0.8086 | -0.01978 | 0.8157 | 0.4928 |
| DAG | 0.3092 | 0.3468 | 1 | 0.2463 | 0.1352 | 0.2238 | 0.2681 |
| Chol | 0.9589 | 0.8086 | 0.2463 | 1 | 0.09742 | 0.9422 | 0.5628 |
| FFA | -0.06441 | -0.01978 | 0.1352 | 0.09742 | 1 | -0.1346 | -0.1822 |
| TAG | 0.9798 | 0.8157 | 0.2238 | 0.9422 | -0.1346 | 1 | 0.5632 |
| Sterol esters | 0.6491 | 0.4928 | 0.2681 | 0.5628 | -0.1822 | 0.5632 | 1 |

4. Correlation matrix for blastula



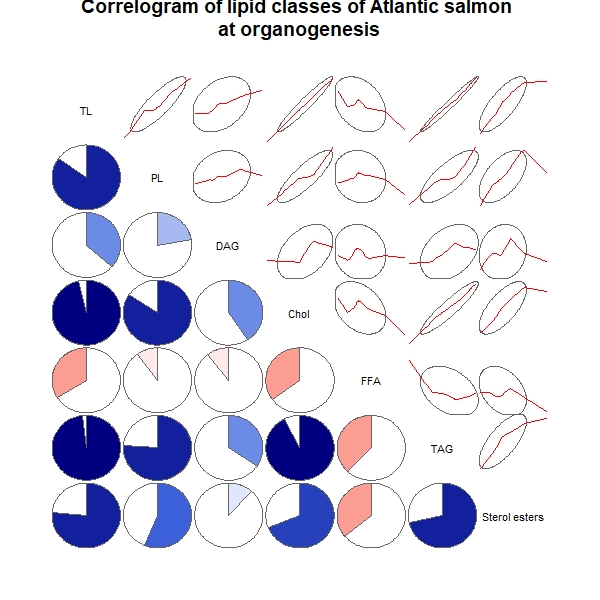
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.8984 | 0.6963 | 0.9718 | 0.04785 | 0.9828 | 0.7955 |
| PL | 0.8984 | 1 | 0.6046 | 0.811 | 0.1008 | 0.8399 | 0.6601 |
| DAG | 0.6963 | 0.6046 | 1 | 0.7893 | 0.2138 | 0.6155 | 0.5749 |
| Chol | 0.9718 | 0.811 | 0.7893 | 1 | 0.08278 | 0.9505 | 0.7908 |
| FFA | 0.04785 | 0.1008 | 0.2138 | 0.08278 | 1 | -0.0383 | 0.05411 |
| TAG | 0.9828 | 0.8399 | 0.6155 | 0.9505 | -0.0383 | 1 | 0.7283 |
| Sterol esters | 0.7955 | 0.6601 | 0.5749 | 0.7908 | 0.05411 | 0.7283 | 1 |

5. Correlation matrix for gastrula



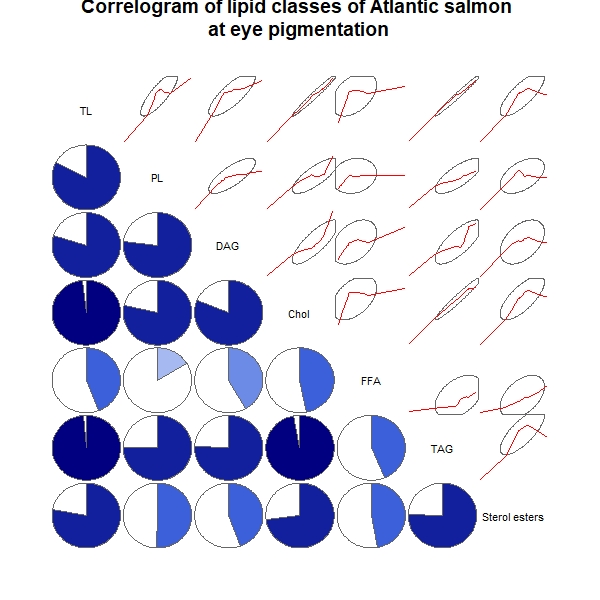
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.8672 | 0.504 | 0.9494 | -0.0531 | 0.9834 | 0.7076 |
| PL | 0.8672 | 1 | 0.3452 | 0.8809 | 0.04315 | 0.8109 | 0.3833 |
| DAG | 0.504 | 0.3452 | 1 | 0.5893 | 0.1441 | 0.4073 | 0.5524 |
| Chol | 0.9494 | 0.8809 | 0.5893 | 1 | 0.0796 | 0.8997 | 0.598 |
| FFA | -0.0531 | 0.04315 | 0.1441 | 0.0796 | 1 | -0.126 | -0.1145 |
| TAG | 0.9834 | 0.8109 | 0.4073 | 0.8997 | -0.126 | 1 | 0.6735 |
| Sterol esters | 0.7076 | 0.3833 | 0.5524 | 0.598 | -0.1145 | 0.6735 | 1 |

6. Correlation matrix for organogenesis



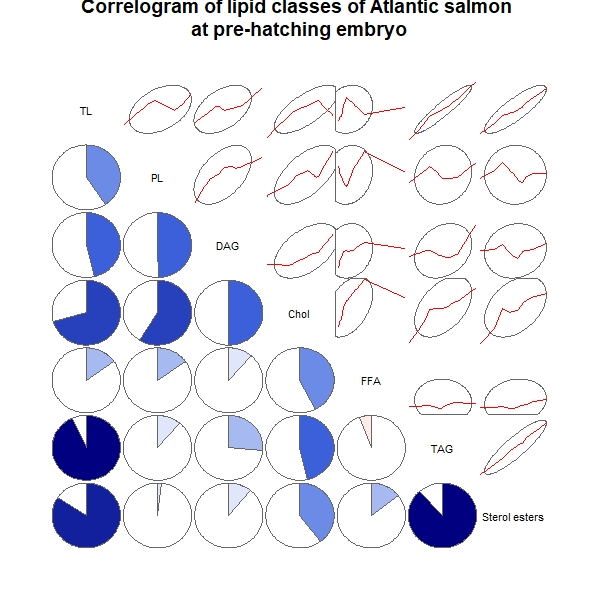
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.8507 | 0.3657 | 0.962 | -0.3367 | 0.9816 | 0.7643 |
| PL | 0.8507 | 1 | 0.2242 | 0.8425 | -0.1014 | 0.7627 | 0.5645 |
| DAG | 0.3657 | 0.2242 | 1 | 0.4087 | -0.106 | 0.3444 | 0.1151 |
| Chol | 0.962 | 0.8425 | 0.4087 | 1 | -0.3517 | 0.9245 | 0.6916 |
| FFA | -0.3367 | -0.1014 | -0.106 | -0.3517 | 1 | -0.3763 | -0.3603 |
| TAG | 0.9816 | 0.7627 | 0.3444 | 0.9245 | -0.3763 | 1 | 0.7156 |
| Sterol esters | 0.7643 | 0.5645 | 0.1151 | 0.6916 | -0.3603 | 0.7156 | 1 |

7. Correlation matrix for eye pigmentation



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.8269 | 0.7977 | 0.981 | 0.4411 | 0.9871 | 0.7819 |
| PL | 0.8269 | 1 | 0.7674 | 0.7841 | 0.1613 | 0.7518 | 0.5043 |
| DAG | 0.7977 | 0.7674 | 1 | 0.8125 | 0.4197 | 0.7561 | 0.4458 |
| Chol | 0.981 | 0.7841 | 0.8125 | 1 | 0.4684 | 0.9713 | 0.7281 |
| FFA | 0.4411 | 0.1613 | 0.4197 | 0.4684 | 1 | 0.4383 | 0.4686 |
| TAG | 0.9871 | 0.7518 | 0.7561 | 0.9713 | 0.4383 | 1 | 0.7539 |
| Sterol esters | 0.7819 | 0.5043 | 0.4458 | 0.7281 | 0.4686 | 0.7539 | 1 |

8. Correlation matrix for pre-hatching embryo



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.4038 | 0.4633 | 0.7079 | 0.1488 | 0.9323 | 0.8428 |
| PL | 0.4038 | 1 | 0.4969 | 0.5902 | 0.1534 | 0.1137 | 0.01861 |
| DAG | 0.4633 | 0.4969 | 1 | 0.5004 | 0.1142 | 0.2636 | 0.1092 |
| Chol | 0.7079 | 0.5902 | 0.5004 | 1 | 0.4252 | 0.463 | 0.3991 |
| FFA | 0.1488 | 0.1534 | 0.1142 | 0.4252 | 1 | -0.0571 | 0.1451 |
| TAG | 0.9323 | 0.1137 | 0.2636 | 0.463 | -0.0571 | 1 | 0.8838 |
| Sterol esters | 0.8428 | 0.01861 | 0.1092 | 0.3991 | 0.1451 | 0.8838 | 1 |

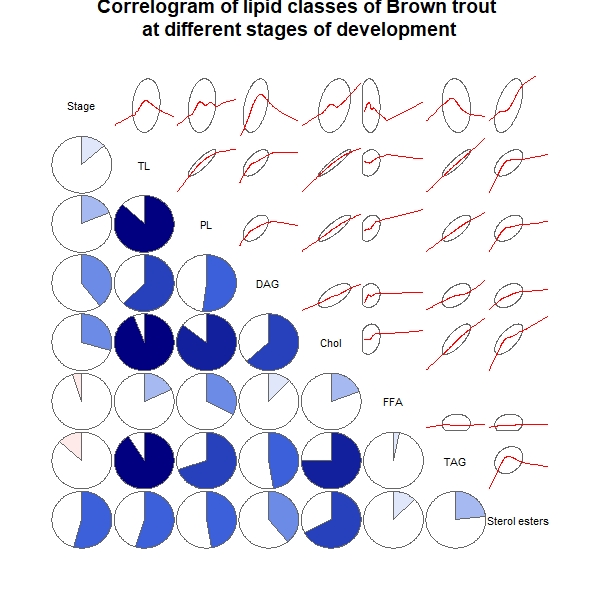
9. Correlation matrix for alevin



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.661 | 0.7713 | 0.9418 | 0.1434 | 0.9878 | 0.9367 |
| PL | 0.661 | 1 | 0.6237 | 0.809 | 0.03005 | 0.5547 | 0.4371 |
| DAG | 0.7713 | 0.6237 | 1 | 0.776 | 0.2574 | 0.7164 | 0.6905 |
| Chol | 0.9418 | 0.809 | 0.776 | 1 | 0.1281 | 0.8897 | 0.8075 |
| FFA | 0.1434 | 0.03005 | 0.2574 | 0.1281 | 1 | 0.1149 | 0.1915 |
| TAG | 0.9878 | 0.5547 | 0.7164 | 0.8897 | 0.1149 | 1 | 0.9431 |
| Sterol esters | 0.9367 | 0.4371 | 0.6905 | 0.8075 | 0.1915 | 0.9431 | 1 |

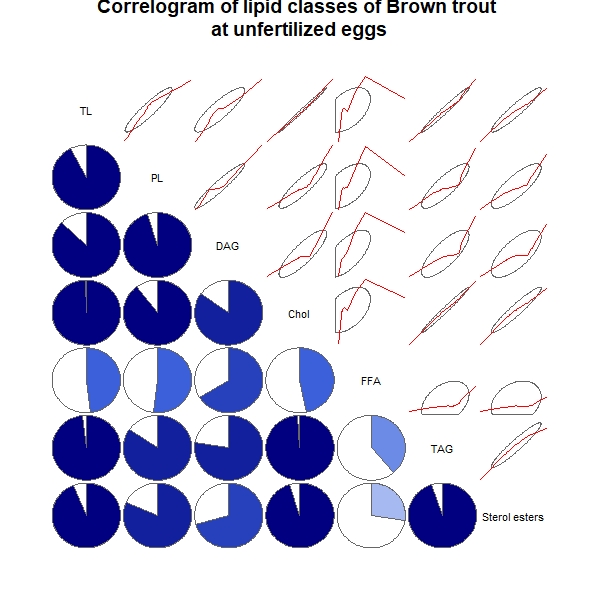
**Correlation tables and correlograms for Brown trout (*Salmo trutta* L.):**

1. General correlation for all stages of development



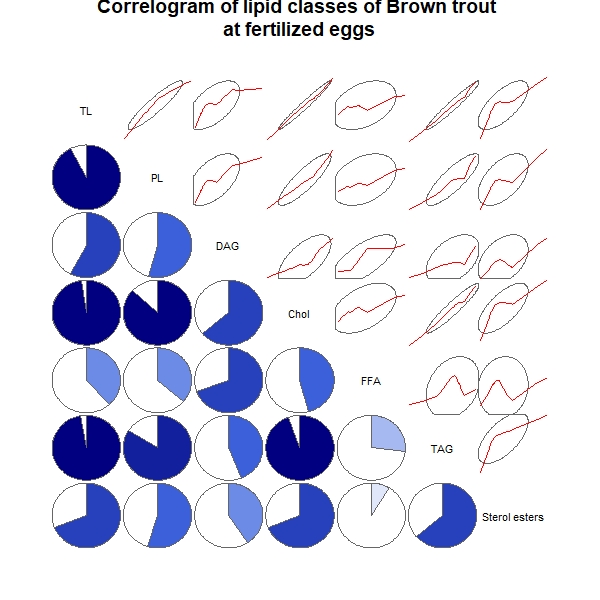
|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Stage | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| Stage | 1 | 0.1328 | 0.1825 | 0.3984 | 0.2961 | -0.05326 | -0.1308 | 0.5435 |
| TL | 0.1328 | 1 | 0.8715 | 0.6209 | 0.9417 | 0.184 | 0.9116 | 0.5479 |
| PL | 0.1825 | 0.8715 | 1 | 0.5232 | 0.856 | 0.3256 | 0.6972 | 0.4733 |
| DAG | 0.3984 | 0.6209 | 0.5232 | 1 | 0.6343 | 0.1189 | 0.4733 | 0.3932 |
| Chol | 0.2961 | 0.9417 | 0.856 | 0.6343 | 1 | 0.1933 | 0.7531 | 0.6758 |
| FFA | -0.05326 | 0.184 | 0.3256 | 0.1189 | 0.1933 | 1 | 0.03361 | 0.1215 |
| TAG | -0.1308 | 0.9116 | 0.6972 | 0.4733 | 0.7531 | 0.03361 | 1 | 0.2315 |
| Sterol esters | 0.5435 | 0.5479 | 0.4733 | 0.3932 | 0.6758 | 0.1215 | 0.2315 | 1 |

2. Correlation matrix for unfertilized eggs



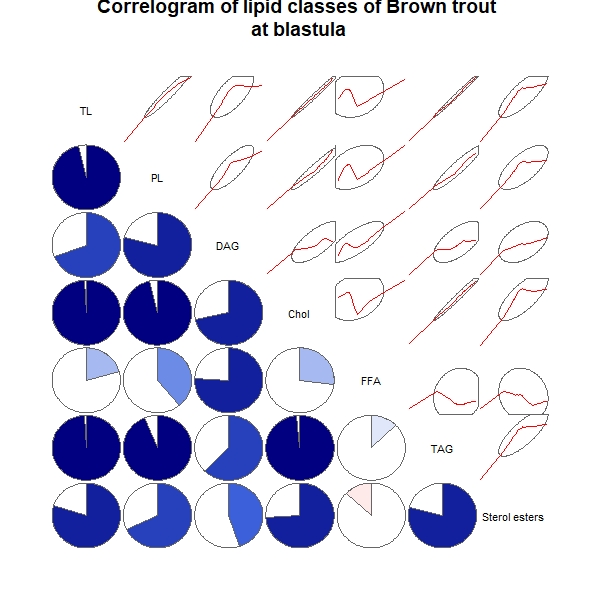
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.9246 | 0.8698 | 0.9955 | 0.4815 | 0.9821 | 0.9414 |
| PL | 0.9246 | 1 | 0.9515 | 0.8953 | 0.5205 | 0.8433 | 0.8132 |
| DAG | 0.8698 | 0.9515 | 1 | 0.8478 | 0.6619 | 0.7743 | 0.7072 |
| Chol | 0.9955 | 0.8953 | 0.8478 | 1 | 0.469 | 0.9865 | 0.9485 |
| FFA | 0.4815 | 0.5205 | 0.6619 | 0.469 | 1 | 0.3853 | 0.2753 |
| TAG | 0.9821 | 0.8433 | 0.7743 | 0.9865 | 0.3853 | 1 | 0.9504 |
| Sterol esters | 0.9414 | 0.8132 | 0.7072 | 0.9485 | 0.2753 | 0.9504 | 1 |

3. Correlation matrix for fertilized eggs



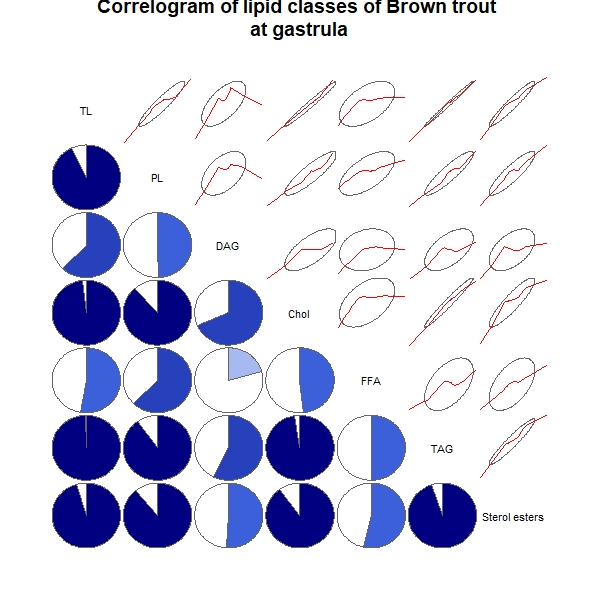
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.9228 | 0.5789 | 0.9799 | 0.3833 | 0.9709 | 0.6911 |
| PL | 0.9228 | 1 | 0.5438 | 0.867 | 0.3631 | 0.8387 | 0.5461 |
| DAG | 0.5789 | 0.5438 | 1 | 0.6404 | 0.6949 | 0.4407 | 0.4084 |
| Chol | 0.9799 | 0.867 | 0.6404 | 1 | 0.4623 | 0.9444 | 0.6923 |
| FFA | 0.3833 | 0.3631 | 0.6949 | 0.4623 | 1 | 0.2669 | 0.08743 |
| TAG | 0.9709 | 0.8387 | 0.4407 | 0.9444 | 0.2669 | 1 | 0.6405 |
| Sterol esters | 0.6911 | 0.5461 | 0.4084 | 0.6923 | 0.08743 | 0.6405 | 1 |

4. Correlation matrix for blastula



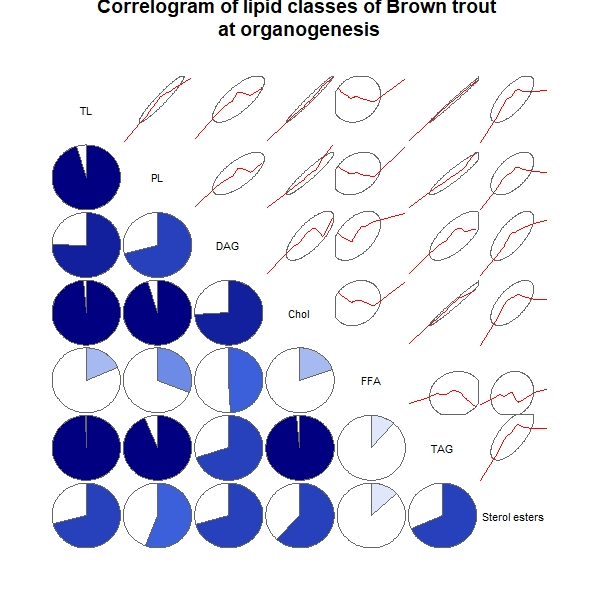
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.9629 | 0.6913 | 0.9915 | 0.205 | 0.9938 | 0.8025 |
| PL | 0.9629 | 1 | 0.7869 | 0.9639 | 0.3879 | 0.9382 | 0.6797 |
| DAG | 0.6913 | 0.7869 | 1 | 0.7162 | 0.7578 | 0.6229 | 0.4473 |
| Chol | 0.9915 | 0.9639 | 0.7162 | 1 | 0.2729 | 0.9851 | 0.7393 |
| FFA | 0.205 | 0.3879 | 0.7578 | 0.2729 | 1 | 0.1285 | -0.1302 |
| TAG | 0.9938 | 0.9382 | 0.6229 | 0.9851 | 0.1285 | 1 | 0.7887 |
| Sterol esters | 0.8025 | 0.6797 | 0.4473 | 0.7393 | -0.1302 | 0.7887 | 1 |

5. Correlation matrix for gastrula



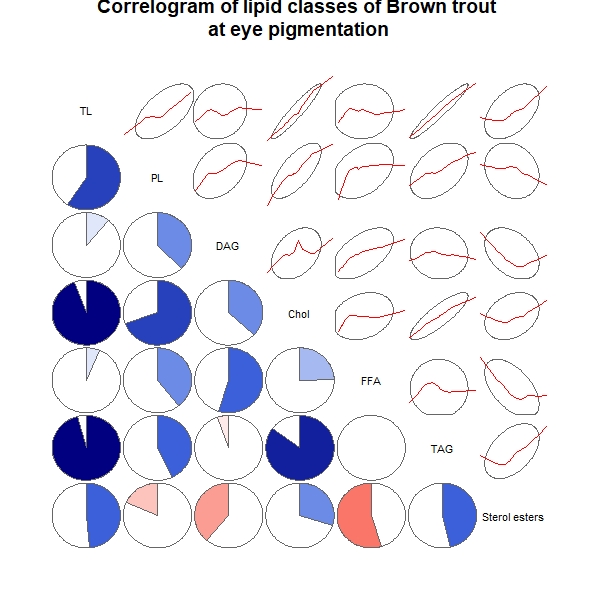
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.9285 | 0.6237 | 0.9834 | 0.5277 | 0.994 | 0.953 |
| PL | 0.9285 | 1 | 0.4933 | 0.8808 | 0.6212 | 0.9006 | 0.8864 |
| DAG | 0.6237 | 0.4933 | 1 | 0.6865 | 0.2085 | 0.5715 | 0.5107 |
| Chol | 0.9834 | 0.8808 | 0.6865 | 1 | 0.4838 | 0.9762 | 0.9004 |
| FFA | 0.5277 | 0.6212 | 0.2085 | 0.4838 | 1 | 0.4969 | 0.5382 |
| TAG | 0.994 | 0.9006 | 0.5715 | 0.9762 | 0.4969 | 1 | 0.9497 |
| Sterol esters | 0.953 | 0.8864 | 0.5107 | 0.9004 | 0.5382 | 0.9497 | 1 |

6. Correlation matrix for organogenesis



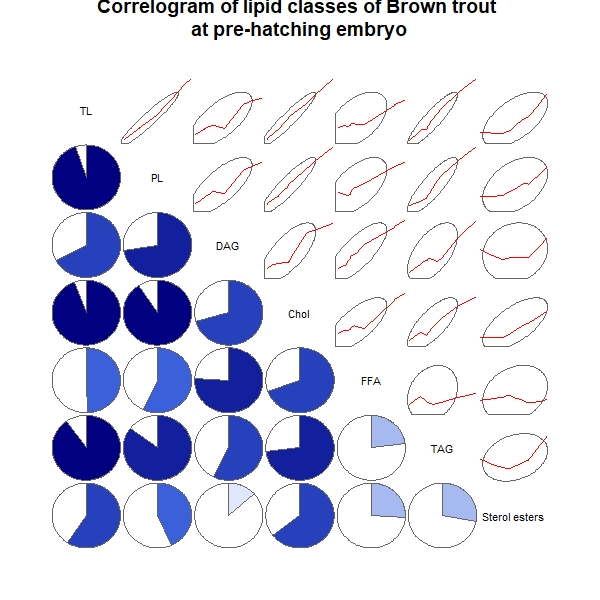
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.9551 | 0.754 | 0.9874 | 0.1874 | 0.9948 | 0.7125 |
| PL | 0.9551 | 1 | 0.7064 | 0.9523 | 0.3107 | 0.9385 | 0.5588 |
| DAG | 0.754 | 0.7064 | 1 | 0.7411 | 0.4929 | 0.7011 | 0.7041 |
| Chol | 0.9874 | 0.9523 | 0.7411 | 1 | 0.1937 | 0.9859 | 0.6186 |
| FFA | 0.1874 | 0.3107 | 0.4929 | 0.1937 | 1 | 0.1109 | 0.1294 |
| TAG | 0.9948 | 0.9385 | 0.7011 | 0.9859 | 0.1109 | 1 | 0.6833 |
| Sterol esters | 0.7125 | 0.5588 | 0.7041 | 0.6186 | 0.1294 | 0.6833 | 1 |

7. Correlation matrix for eye pigmentation



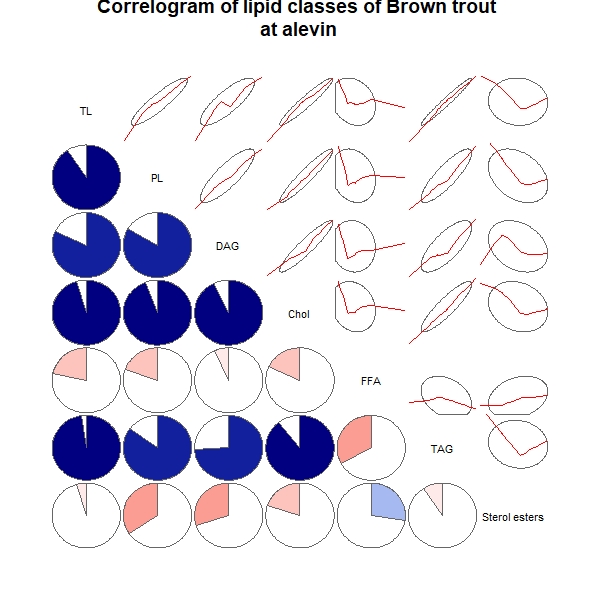
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.5903 | 0.1113 | 0.9453 | 0.06324 | 0.958 | 0.4843 |
| PL | 0.5903 | 1 | 0.3785 | 0.6968 | 0.3921 | 0.4296 | -0.1831 |
| DAG | 0.1113 | 0.3785 | 1 | 0.3698 | 0.5493 | -0.05375 | -0.3865 |
| Chol | 0.9453 | 0.6968 | 0.3698 | 1 | 0.2472 | 0.849 | 0.2974 |
| FFA | 0.06324 | 0.3921 | 0.5493 | 0.2472 | 1 | -0.0004518 | -0.5507 |
| TAG | 0.958 | 0.4296 | -0.05375 | 0.849 | -0.0004518 | 1 | 0.4637 |
| Sterol esters | 0.4843 | -0.1831 | -0.3865 | 0.2974 | -0.5507 | 0.4637 | 1 |

8. Correlation matrix for pre-hatching embryo



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.9505 | 0.6725 | 0.9422 | 0.4956 | 0.902 | 0.5905 |
| PL | 0.9505 | 1 | 0.7222 | 0.9049 | 0.5673 | 0.8513 | 0.4345 |
| DAG | 0.6725 | 0.7222 | 1 | 0.7051 | 0.7578 | 0.5741 | 0.1331 |
| Chol | 0.9422 | 0.9049 | 0.7051 | 1 | 0.6953 | 0.7342 | 0.6465 |
| FFA | 0.4956 | 0.5673 | 0.7578 | 0.6953 | 1 | 0.2295 | 0.2587 |
| TAG | 0.902 | 0.8513 | 0.5741 | 0.7342 | 0.2295 | 1 | 0.2812 |
| Sterol esters | 0.5905 | 0.4345 | 0.1331 | 0.6465 | 0.2587 | 0.2812 | 1 |

9. Correlation matrix for alevin



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | TL | PL | DAG | Chol | FFA | TAG | Sterol esters |
| TL | 1 | 0.9053 | 0.8181 | 0.9519 | -0.2182 | 0.9764 | -0.04615 |
| PL | 0.9053 | 1 | 0.8335 | 0.9429 | -0.1947 | 0.85 | -0.346 |
| DAG | 0.8181 | 0.8335 | 1 | 0.9274 | -0.06694 | 0.7433 | -0.2973 |
| Chol | 0.9519 | 0.9429 | 0.9274 | 1 | -0.1814 | 0.8905 | -0.1999 |
| FFA | -0.2182 | -0.1947 | -0.06694 | -0.1814 | 1 | -0.3324 | 0.2744 |
| TAG | 0.9764 | 0.85 | 0.7433 | 0.8905 | -0.3324 | 1 | -0.09546 |
| Sterol esters | -0.04615 | -0.346 | -0.2973 | -0.1999 | 0.2744 | -0.09546 | 1 |

**Supplementary materials 2**

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Correlation tables and correlograms of phospholipid classes for Atlantic salmon (*Salmo salar* L.) and Brown trout (*Salmo trutta* L.) at different stages of embryonic and early postembryonic development

Graph Explanations: PI – phosphotidylinositol, PS – phosphatidylserine, PE – phosphatidylethanolamine, PC – phosphatidylcholine, LPC – lysophosphatidylcholine, SM – sphingomyelin.

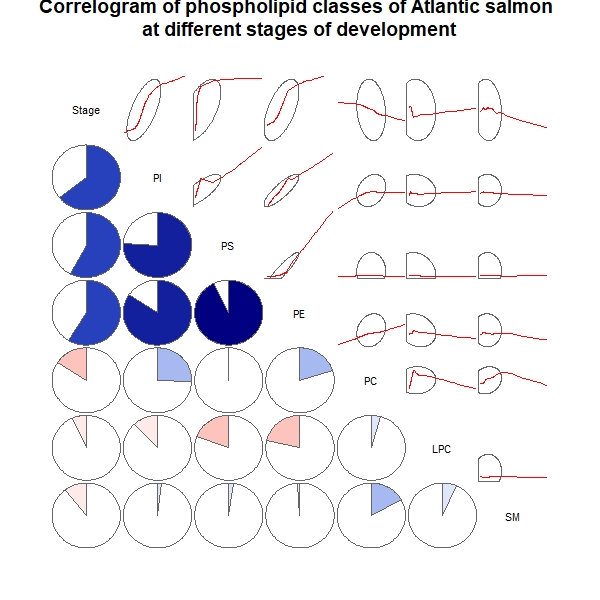
The lower left corner of the graph describes the correlations between the lipid components - the fill color (blue and red) and the direction of filling the “circle” (clockwise and counterclockwise) determine the direction of correlation (positive correlation and negative correlation, respectively). Color saturation indicates the degree of correlation (according to Pearson).

The upper right corner describes the distribution of lipid components (red line) and their confidence interval (ellipse).

Below the graph is a table of the correlation matrix with numerical values.

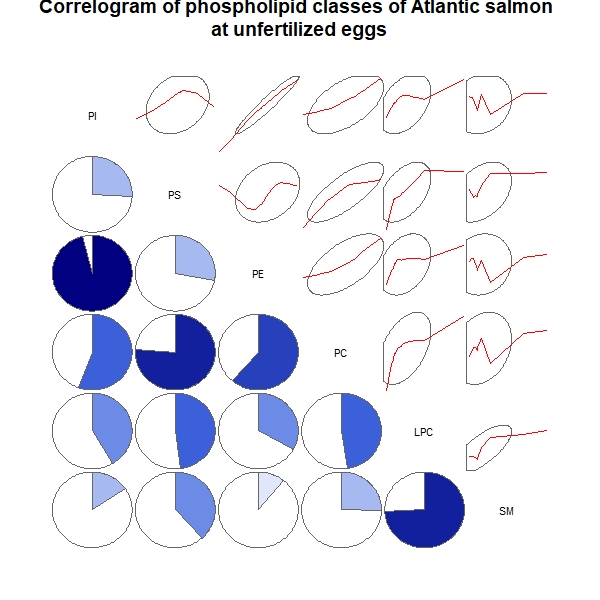
**Correlation tables and correlograms for Atlantic salmon (*Salmo salar* L.):**

1. General correlation for all stages of development



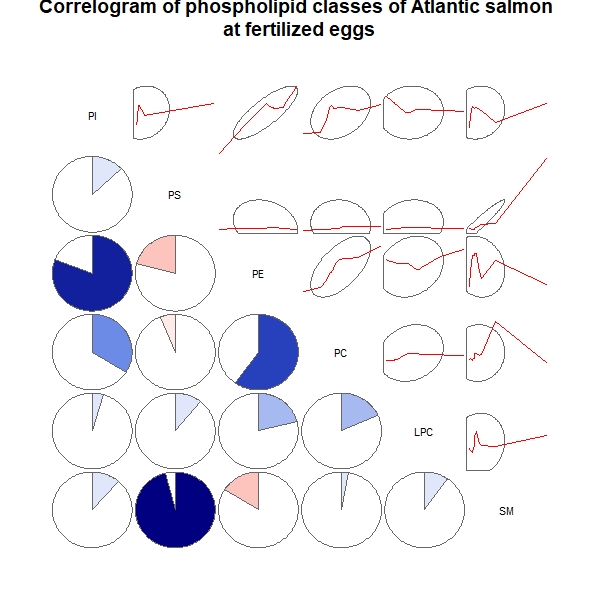
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Stage | PI | PS | PE | PC | LPC | SM |
| Stage | 1 | 0.6436 | 0.575 | 0.5853 | -0.1567 | -0.06591 | -0.1061 |
| PI | 0.6436 | 1 | 0.7596 | 0.8418 | 0.2569 | -0.1196 | 0.01977 |
| PS | 0.575 | 0.7596 | 1 | 0.9287 | 0.007526 | -0.1946 | 0.02284 |
| PE | 0.5853 | 0.8418 | 0.9287 | 1 | 0.2007 | -0.2157 | -0.01308 |
| PC | -0.1567 | 0.2569 | 0.007526 | 0.2007 | 1 | 0.0459 | 0.1686 |
| LPC | -0.06591 | -0.1196 | -0.1946 | -0.2157 | 0.0459 | 1 | 0.06767 |
| SM | -0.1061 | 0.01977 | 0.02284 | -0.01308 | 0.1686 | 0.06767 | 1 |

2. Correlation matrix for unfertilized eggs



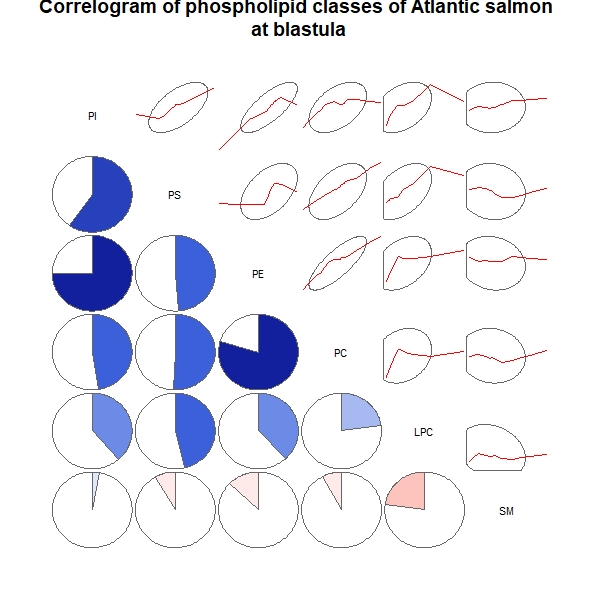
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.2606 | 0.9614 | 0.5565 | 0.4173 | 0.1557 |
| PS | 0.2606 | 1 | 0.2797 | 0.7623 | 0.4777 | 0.3835 |
| PE | 0.9614 | 0.2797 | 1 | 0.6135 | 0.3329 | 0.1059 |
| PC | 0.5565 | 0.7623 | 0.6135 | 1 | 0.4778 | 0.2524 |
| LPC | 0.4173 | 0.4777 | 0.3329 | 0.4778 | 1 | 0.7429 |
| SM | 0.1557 | 0.3835 | 0.1059 | 0.2524 | 0.7429 | 1 |

3. Correlation matrix for fertilized eggs



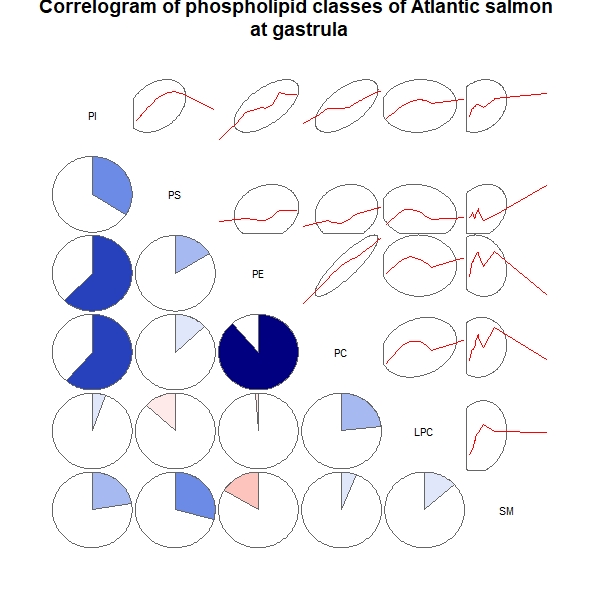
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.1286 | 0.8079 | 0.3386 | 0.04592 | 0.1143 |
| PS | 0.1286 | 1 | -0.2074 | -0.06258 | 0.1083 | 0.9611 |
| PE | 0.8079 | -0.2074 | 1 | 0.5984 | 0.2114 | -0.1608 |
| PC | 0.3386 | -0.06258 | 0.5984 | 1 | 0.1812 | 0.02832 |
| LPC | 0.04592 | 0.1083 | 0.2114 | 0.1812 | 1 | 0.09753 |
| SM | 0.1143 | 0.9611 | -0.1608 | 0.02832 | 0.09753 | 1 |

4. Correlation matrix for blastula



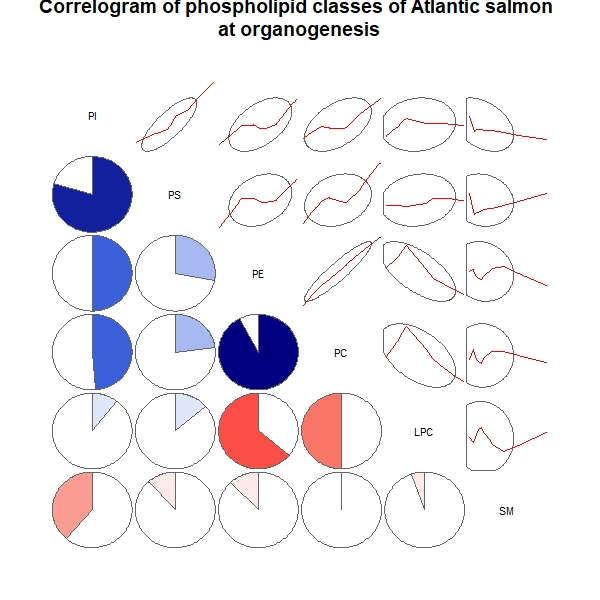
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.5976 | 0.7497 | 0.4738 | 0.3866 | 0.03027 |
| PS | 0.5976 | 1 | 0.4883 | 0.506 | 0.4614 | -0.08363 |
| PE | 0.7497 | 0.4883 | 1 | 0.7965 | 0.3815 | -0.1292 |
| PC | 0.4738 | 0.506 | 0.7965 | 1 | 0.2262 | -0.08036 |
| LPC | 0.3866 | 0.4614 | 0.3815 | 0.2262 | 1 | -0.2266 |
| SM | 0.03027 | -0.08363 | -0.1292 | -0.08036 | -0.2266 | 1 |

5. Correlation matrix for gastrula



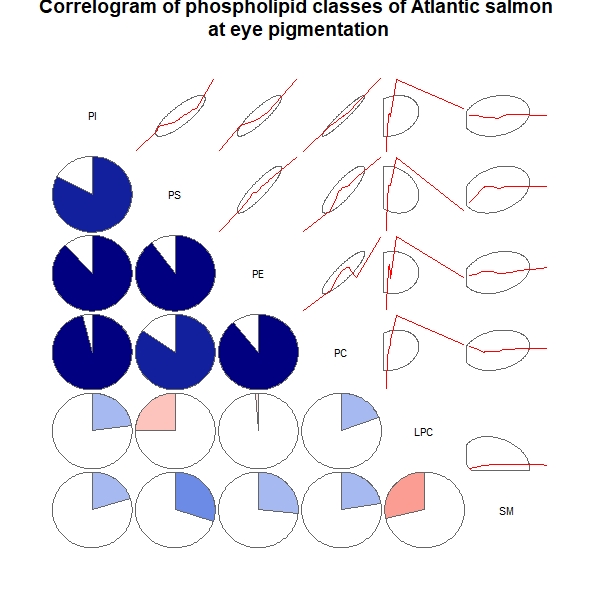
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.3411 | 0.621 | 0.6139 | 0.05449 | 0.2247 |
| PS | 0.3411 | 1 | 0.1645 | 0.131 | -0.1306 | 0.2907 |
| PE | 0.621 | 0.1645 | 1 | 0.8857 | -0.01277 | -0.1651 |
| PC | 0.6139 | 0.131 | 0.8857 | 1 | 0.2312 | 0.06163 |
| LPC | 0.05449 | -0.1306 | -0.01277 | 0.2312 | 1 | 0.133 |
| SM | 0.2247 | 0.2907 | -0.1651 | 0.06163 | 0.133 | 1 |

6. Correlation matrix for organogenesis



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.7956 | 0.5008 | 0.4885 | 0.1061 | -0.3868 |
| PS | 0.7956 | 1 | 0.2803 | 0.2314 | 0.1369 | -0.1163 |
| PE | 0.5008 | 0.2803 | 1 | 0.9234 | -0.6406 | -0.1218 |
| PC | 0.4885 | 0.2314 | 0.9234 | 1 | -0.4995 | -0.004171 |
| LPC | 0.1061 | 0.1369 | -0.6406 | -0.4995 | 1 | -0.05402 |
| SM | -0.3868 | -0.1163 | -0.1218 | -0.004171 | -0.05402 | 1 |

7. Correlation matrix for eye pigmentation



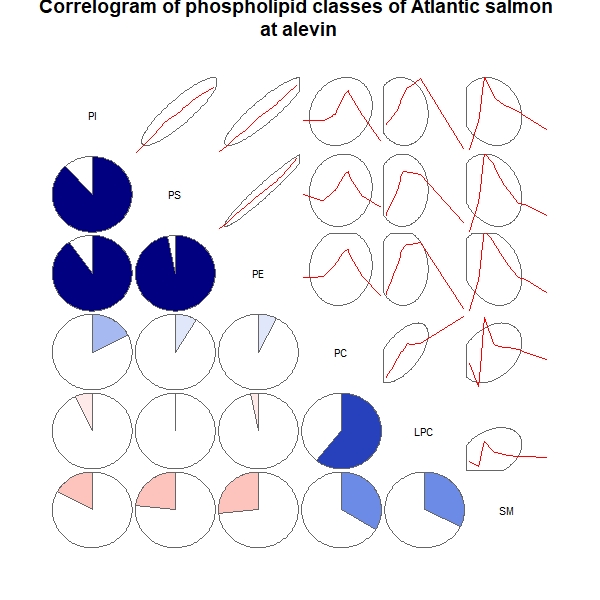
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.8299 | 0.8835 | 0.9626 | 0.2281 | 0.2014 |
| PS | 0.8299 | 1 | 0.9001 | 0.8484 | -0.2489 | 0.3002 |
| PE | 0.8835 | 0.9001 | 1 | 0.8949 | -0.01217 | 0.2663 |
| PC | 0.9626 | 0.8484 | 0.8949 | 1 | 0.1916 | 0.2218 |
| LPC | 0.2281 | -0.2489 | -0.01217 | 0.1916 | 1 | -0.286 |
| SM | 0.2014 | 0.3002 | 0.2663 | 0.2218 | -0.286 | 1 |

8. Correlation matrix for pre-hatching embryo



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.9034 | 0.7927 | 0.5099 | 0.3749 | 0.1921 |
| PS | 0.9034 | 1 | 0.8935 | 0.3335 | 0.4999 | -0.1482 |
| PE | 0.7927 | 0.8935 | 1 | 0.166 | 0.37 | -0.299 |
| PC | 0.5099 | 0.3335 | 0.166 | 1 | 0.3275 | 0.5083 |
| LPC | 0.3749 | 0.4999 | 0.37 | 0.3275 | 1 | -0.07115 |
| SM | 0.1921 | -0.1482 | -0.299 | 0.5083 | -0.07115 | 1 |

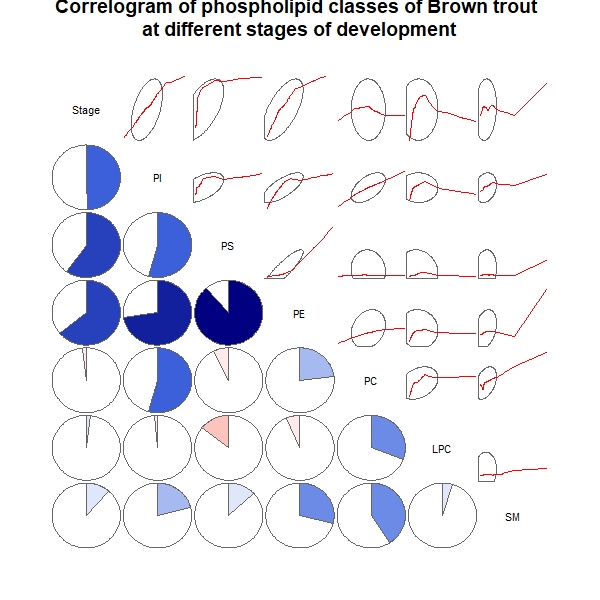
9. Correlation matrix for alevin



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.8846 | 0.9021 | 0.1769 | -0.06853 | -0.1698 |
| PS | 0.8846 | 1 | 0.9705 | 0.08864 | 0.006305 | -0.2315 |
| PE | 0.9021 | 0.9705 | 1 | 0.07324 | -0.03202 | -0.2646 |
| PC | 0.1769 | 0.08864 | 0.07324 | 1 | 0.6086 | 0.3363 |
| LPC | -0.06853 | 0.006305 | -0.03202 | 0.6086 | 1 | 0.3216 |
| SM | -0.1698 | -0.2315 | -0.2646 | 0.3363 | 0.3216 | 1 |

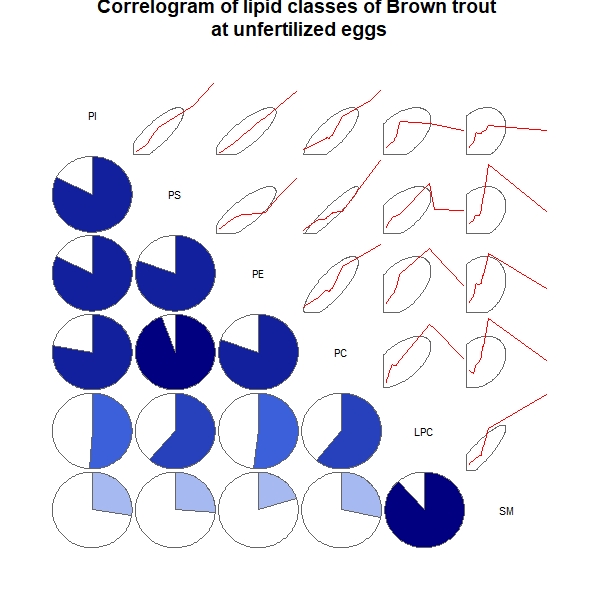
**Correlation tables and correlograms for Brown trout (*Salmo trutta* L.):**

1. General correlation for all stages of development



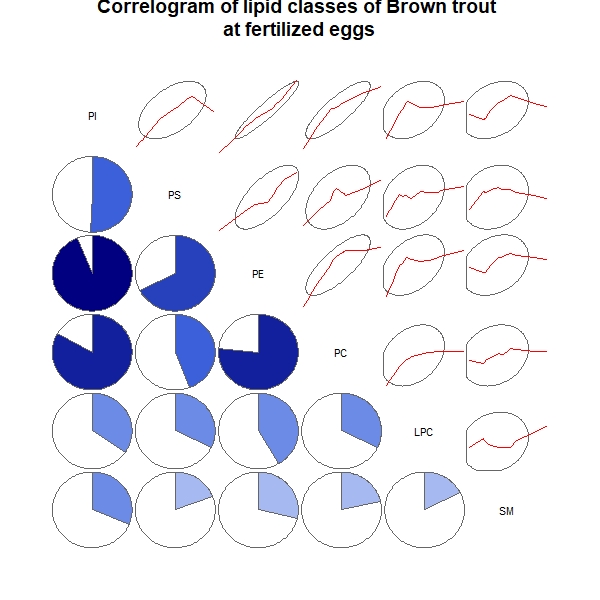
|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Stage | PI | PS | | PE | PC | LPC | SM |
| Stage | 1 | 0.4931 | | 0.6004 | 0.6404 | -0.01753 | 0.01965 | 0.1147 |
| PI | 0.4931 | 1 | | 0.5407 | 0.7249 | 0.543 | -0.01574 | 0.2097 |
| PS | 0.6004 | 0.5407 | | 1 | 0.8874 | -0.07241 | -0.144 | 0.1306 |
| PE | 0.6404 | 0.7249 | | 0.8874 | 1 | 0.2302 | -0.06693 | 0.2901 |
| PC | -0.01753 | 0.543 | | -0.07241 | 0.2302 | 1 | 0.3088 | 0.4076 |
| LPC | 0.01965 | -0.01574 | | -0.144 | -0.06693 | 0.3088 | 1 | 0.04955 |
| SM | 0.1147 | 0.2097 | | 0.1306 | 0.2901 | 0.4076 | 0.04955 | 1 |

2. Correlation matrix for unfertilized eggs



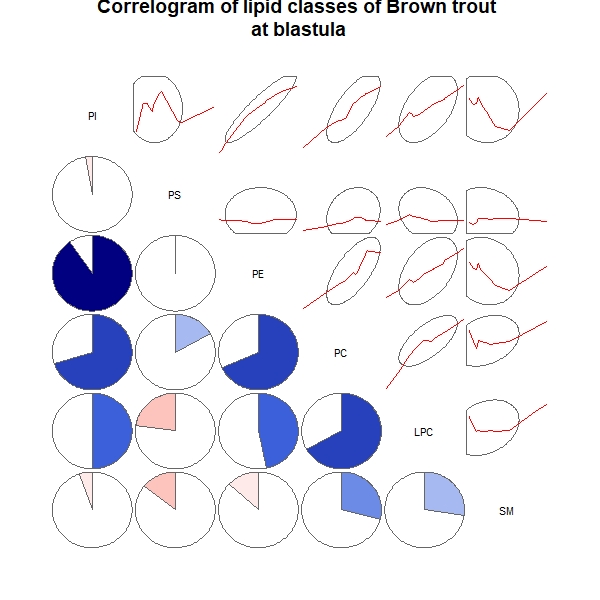
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.8237 | 0.8219 | 0.7766 | 0.5124 | 0.274 |
| PS | 0.8237 | 1 | 0.8055 | 0.944 | 0.6114 | 0.2599 |
| PE | 0.8219 | 0.8055 | 1 | 0.8025 | 0.5183 | 0.2024 |
| PC | 0.7766 | 0.944 | 0.8025 | 1 | 0.6059 | 0.283 |
| LPC | 0.5124 | 0.6114 | 0.5183 | 0.6059 | 1 | 0.8863 |
| SM | 0.274 | 0.2599 | 0.2024 | 0.283 | 0.8863 | 1 |

3. Correlation matrix for fertilized eggs



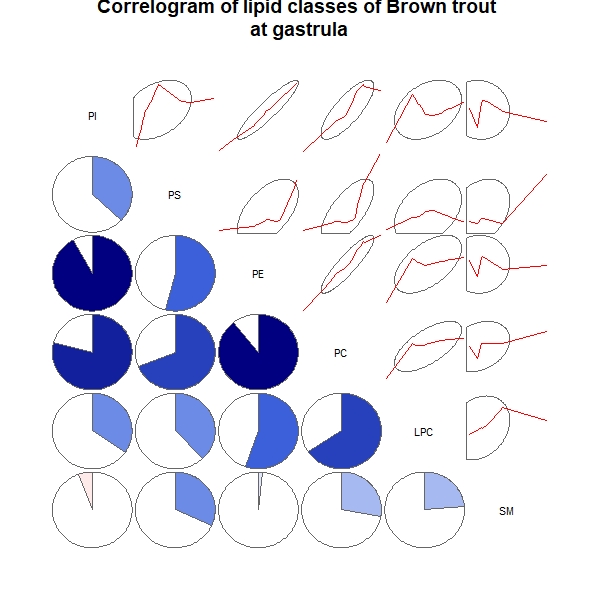
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.505 | 0.9392 | 0.8337 | 0.3453 | 0.3116 |
| PS | 0.505 | 1 | 0.676 | 0.4437 | 0.3197 | 0.1928 |
| PE | 0.9392 | 0.676 | 1 | 0.7658 | 0.414 | 0.2847 |
| PC | 0.8337 | 0.4437 | 0.7658 | 1 | 0.3207 | 0.2132 |
| LPC | 0.3453 | 0.3197 | 0.414 | 0.3207 | 1 | 0.175 |
| SM | 0.3116 | 0.1928 | 0.2847 | 0.2132 | 0.175 | 1 |

4. Correlation matrix for blastula



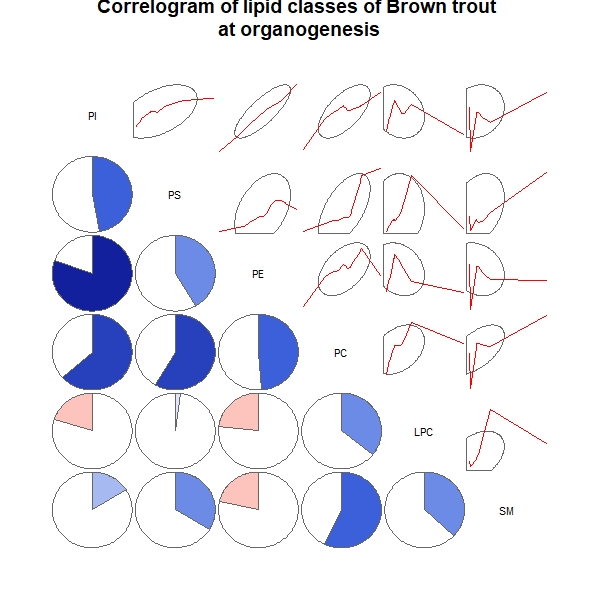
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | -0.02515 | 0.9052 | 0.7028 | 0.4994 | -0.05384 |
| PS | -0.02515 | 1 | -0.006964 | 0.1701 | -0.2274 | -0.1436 |
| PE | 0.9052 | -0.006964 | 1 | 0.6819 | 0.4696 | -0.1321 |
| PC | 0.7028 | 0.1701 | 0.6819 | 1 | 0.671 | 0.2897 |
| LPC | 0.4994 | -0.2274 | 0.4696 | 0.671 | 1 | 0.2749 |
| SM | -0.05384 | -0.1436 | -0.1321 | 0.2897 | 0.2749 | 1 |

5. Correlation matrix for gastrula



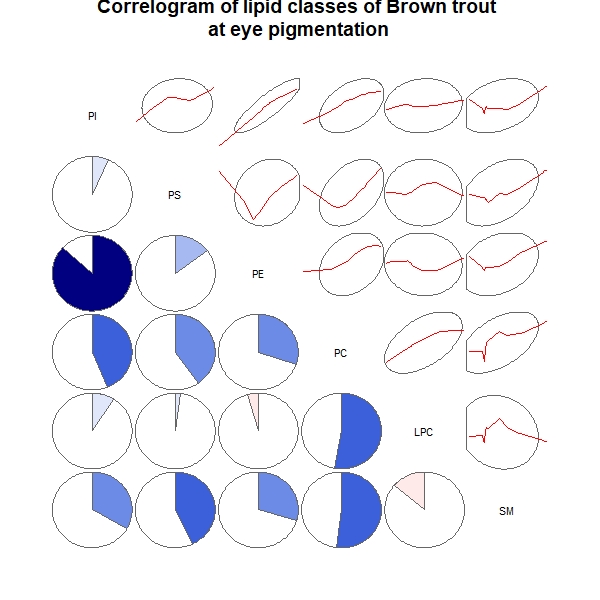
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.3685 | 0.9204 | 0.789 | 0.3439 | -0.05796 |
| PS | 0.3685 | 1 | 0.54 | 0.6879 | 0.3799 | 0.3188 |
| PE | 0.9204 | 0.54 | 1 | 0.8928 | 0.554 | 0.01541 |
| PC | 0.789 | 0.6879 | 0.8928 | 1 | 0.6581 | 0.28 |
| LPC | 0.3439 | 0.3799 | 0.554 | 0.6581 | 1 | 0.2363 |
| SM | -0.05796 | 0.3188 | 0.01541 | 0.28 | 0.2363 | 1 |

6. Correlation matrix for organogenesis



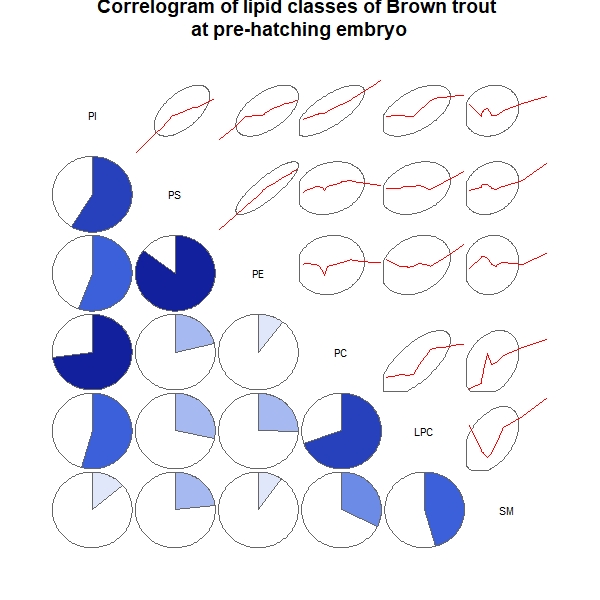
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.4724 | 0.8051 | 0.6341 | -0.2003 | 0.1609 |
| PS | 0.4724 | 1 | 0.4147 | 0.5851 | 0.02193 | 0.3359 |
| PE | 0.8051 | 0.4147 | 1 | 0.4877 | -0.2321 | -0.2134 |
| PC | 0.6341 | 0.5851 | 0.4877 | 1 | 0.3568 | 0.5706 |
| LPC | -0.2003 | 0.02193 | -0.2321 | 0.3568 | 1 | 0.3702 |
| SM | 0.1609 | 0.3359 | -0.2134 | 0.5706 | 0.3702 | 1 |

7. Correlation matrix for eye pigmentation



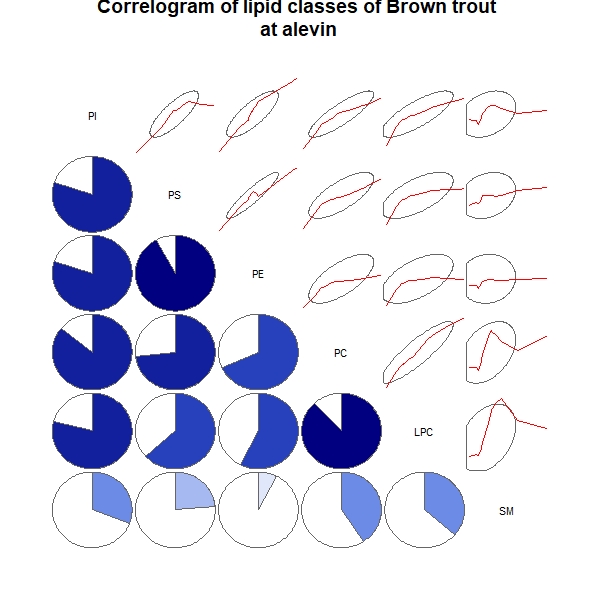
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.06524 | 0.8686 | 0.438 | 0.09039 | 0.3339 |
| PS | 0.06524 | 1 | 0.1491 | 0.4026 | 0.02157 | 0.4288 |
| PE | 0.8686 | 0.1491 | 1 | 0.3022 | -0.04282 | 0.2974 |
| PC | 0.438 | 0.4026 | 0.3022 | 1 | 0.5272 | 0.5202 |
| LPC | 0.09039 | 0.02157 | -0.04282 | 0.5272 | 1 | -0.1365 |
| SM | 0.3339 | 0.4288 | 0.2974 | 0.5202 | -0.1365 | 1 |

8. Correlation matrix for pre-hatching embryo



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.5858 | 0.5553 | 0.7275 | 0.5416 | 0.1368 |
| PS | 0.5858 | 1 | 0.854 | 0.2144 | 0.2839 | 0.2337 |
| PE | 0.5553 | 0.854 | 1 | 0.1037 | 0.2509 | 0.09647 |
| PC | 0.7275 | 0.2144 | 0.1037 | 1 | 0.6978 | 0.322 |
| LPC | 0.5416 | 0.2839 | 0.2509 | 0.6978 | 1 | 0.456 |
| SM | 0.1368 | 0.2337 | 0.09647 | 0.322 | 0.456 | 1 |

9. Correlation matrix for alevin



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | PI | PS | PE | PC | LPC | SM |
| PI | 1 | 0.8002 | 0.798 | 0.8571 | 0.7884 | 0.3093 |
| PS | 0.8002 | 1 | 0.9196 | 0.7325 | 0.6345 | 0.2375 |
| PE | 0.798 | 0.9196 | 1 | 0.682 | 0.5727 | 0.07399 |
| PC | 0.8571 | 0.7325 | 0.682 | 1 | 0.8787 | 0.4066 |
| LPC | 0.7884 | 0.6345 | 0.5727 | 0.8787 | 1 | 0.3637 |
| SM | 0.3093 | 0.2375 | 0.07399 | 0.4066 | 0.3637 | 1 |