**Genetic parameters of backfat fatty acids and carcass traits in Large White pigs.**

R. Davoli, G. Catillo, A. Serra, M. Zappaterra, P. Zambonelli, D. Meo Zilio, R.Steri, M. Mele, L. Buttazzoni, V. Russo.

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Supplementary Table S1. List of the fatty acids and fatty acid categories analysed in the studied pig population with shorthand notation, International Union of Pure and Applied Chemistry (IUPAC) nomenclature and common nomenclature.

|  |  |  |
| --- | --- | --- |
| Shorthand notation | IUPAC nomenclature | Common nomenclature |
| C12:0 | Dodecanoic acid | Lauric acid |
| C14:0 | Tetradecanoic acid | Myristic acid  |
| C14:1 *cis*-9a | (9Z)-Tetradec-9-enoic acid | Myristoleic acid |
| C15:0a | Pentadecanoic acid | Pentadecylic acid |
| C16:0 | Hexadecanoic acid | Palmitic acid |
| C16:1 *cis*-7(*n-*9) | (7Z)-Hexadec-7-enoic acid |  |
| C16:1 *cis*-9(*n-*7) | (9Z)-Hexadec-9-enoic acid | Palmitoleic acid |
| C17:0a | Heptadecanoic acid | Margaric acid |
| C18:0 | Octadecanoic acid | Stearic acid |
| C18:1 *cis*-9(*n-*9) | (9Z)-Octadec-9-enoic acid | Oleic acid |
| C18:1 *cis*-11a | (E)-Octadec-11-enoic acid | Vaccenic acid |
| C18:2 (*n-*6) | (9Z,12Z)-9,12-Octadecadienoic acid | Linoleic acid |
| C18:3 (*n-*3) | (9Z,12Z,15Z)-9,12,15-Octadecatrienoic acid | α-Linolenic acid |
| C20:0 |  Eicosanoic acid | Arachidic acid |
| C20:1 *cis*-11a | (9Z)-9-Icosenoic acid | Gadoleic acid |
| C20:2 (*n-*6) | (11Z,14Z)-Icosa-11,14-dienoic acid | Eicosadienoic acid |
| C20:3 (*n-*6) | (8Z,11Z,14Z)-Icosa-8,11,14-trienoic acid | Dihomo-gamma-linolenic acid |
| C20:4 (*n-*6) | (5Z,8Z,11Z,14Z)-Icosa-5,8,11,14-tetraenoic acid | Arachidonic acid |
| C21:1 (*n-*9)a | 12-Heneicosenoic |  |
|  |  |  |
| C22:1 *cis*-12a | (Z)-Docos-13-enoic acid | Erucic acid |
| C22:4 (*n-*6) | (7Z,10Z,13Z,16Z)-Docosa-7,10,13,16-tetraenoic acid | Adrenic acid |
|  |  |  |
| C22:5 (*n-*3) | (7Z,10Z,13Z,16Z,19Z)-docosa-7,10,13,16,19-pentaenoic acid | Docosapentaenoic acid (DPA) |
| C22:6 (*n-*3) | (4Z,7Z,10Z,13Z,16Z,19Z)-Docosa-4,7,10,13,16,19-hexaenoic acid | Docosahexaenoic acid (DHA) |
| SFA |  | Saturated fatty acids |
| UFA |  | Unsaturated fatty acids |
| MUFA |  | Monounsaturated fatty acids |
| PUFA |  | Polyunsaturated fatty acids |
| (*n-*6)PUFA |  | Omega 6 polyunsaturated fatty acids |
| (*n-*3)PUFA |  | Omega 3 polyunsaturated fatty acids |

a These fatty acids were excluded from the subsequent analyses because of their very low content (4% altogether).

Supplementary Table S2. Estimates of genetic (above diagonal), phenotypic (below diagonal) correlations and heritability values (diagonal, in bord) for backfat fatty acids of the studied pig population.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Traitsa | C12:0 | C14:0 | C16:0 | C16:1 *cis-*7(*n-*9) | C16:1 *cis-*9(*n-*7) | C18:0 | C18:1 *cis-*9(*n-*9) | C18:2(*n-*6)  | C18:3(*n-*3) | C20:0 | C20:2(*n-*6) | C20:3(*n*-6) | C20:4(*n*-6) | C22:4(*n*-6) | C22:5(*n*-3) | C22:6(*n*-3) |
| C12:0 | **0.106** | -0.315\*\*\* | -0.472\*\*\* | 0.413\*\*\* | -0.129\*\*\* | -0.079\* | -0.094\*\* | 0.206\*\*\* | 0.116\*\* | -0.044 | 0.217\*\*\* | 0.061 | 0.094\* | -0.007 | 0.007 | 0.071\* |
| C14:0 | 0.823\*\*\* | **0.255** | -0.442\*\*\* | 0.186\*\*\* | 0.279\*\*\* | -0.233\*\*\* | -0.117\*\* | 0.198\*\*\* | 0.222\*\*\* | -0.185\*\*\* | 0.083\* | 0.203\*\*\* | 0.165\*\*\* | 0.190\*\*\* | 0.185\*\*\* | 0.123\*\*\* |
| C16:0 | 0.009 | 0.445\*\*\* | **0.241** | -0.722\*\*\* | -0.254\*\*\* | 0.364\*\*\* | 0.405\*\*\* | -0.476\*\*\* | -0.422\*\*\* | 0.274\*\*\* | -0.291\*\*\* | -0.321\*\*\* | -0.292\*\*\* | -0.180\*\*\* | -0.226\*\*\* | -0.261\*\*\* |
| C16:1 *cis-7* (*n-*9) | 0.246\*\*\* | 0.059 | -0.453\*\*\* | **0.242** | 0.364\*\*\* | -0.624\*\*\* | -0.065 | 0.692\*\*\* | 0.595\*\*\* | -0.418\*\*\* | 0.596\*\*\* | 0.520\*\*\* | 0.466\*\*\* | 0.350\*\*\* | 0.370\*\*\* | 0.403\*\*\* |
| C16:1 *cis-9* (*n*-7) | 0.455\*\*\* | 0.597\*\*\* | 0.154\*\*\* | 0.227\*\*\* | **0.238** | -0.684\*\*\* | -0.518\*\*\* | 0.541\*\*\* | 0.522\*\*\* | -0.573\*\*\* | -0.121\*\*\* | 0.469\*\*\* | 0.426\*\*\* | 0.377\*\*\* | 0.414\*\*\* | 0.312\*\*\* |
| C18:0 | -0.491\*\*\* | -0.373\*\*\* | 0.419\*\*\* | -0.559\*\*\* | -0.739\*\*\* | **0.248** | -0.013 | -0.838\*\*\* | -0.724\*\*\* | 0.779\*\*\* | -0.149\*\*\* | -0.680\*\*\* | -0.642\*\*\* | -0.517\*\*\* | -0.541\*\*\* | -0.488\*\*\* |
| C18:1 *cis-*9 (*n*-9) | -0.231\*\*\* | -0.287\*\*\* | -0.378\*\*\* | -0.068\* | 0.105\*\* | -0.335\*\*\* | **0.245** | 0.039 | -0.007 | -0.060 | 0.309\*\*\* | 0.087\* | 0.083\* | 0.142\*\*\* | 0.052 | 0.041 |
| C18:2(*n*-6) | 0.415\*\*\* | 0.117\*\* | -0.596\*\*\* | 0.736\*\*\* | 0.212\*\*\* | -0.596\*\*\* | -0.299\*\*\* | **0.242** | 0.905\*\*\* | -0.854\*\*\* | 0.405\*\*\* | 0.815\*\*\* | 0.767\*\*\* | 0.594\*\*\* | 0.618\*\*\* | 0.590\*\*\* |
| C18:3(*n-*3) | 0.178\*\*\* | 0.064 | -0.254\*\*\* | 0.163\*\*\* | 0.049 | -0.203\*\*\* | -0.086\* | 0.317\*\*\* | **0.235** | -0.939\*\*\* | 0.442\*\*\* | 0.908\*\*\* | 0.850\*\*\* | 0.680\*\*\* | 0.701\*\*\* | 0.642\*\*\* |
| C20:0 | -0.461\*\*\* | -0.418\*\*\* | 0.112\*\* | -0.476\*\*\* | -0.487\*\*\* | 0.561\*\*\* | 0.145\*\*\* | -0.538\*\*\* | -0.118\*\* | **0.243** | -0.237\*\*\* | -0.913\*\*\* | -0.862\*\*\* | -0.712\*\*\* | -0.729\*\*\* | -0.634\*\*\* |
| C20:2(*n-*6) | -0.153\*\*\* | -0.432\*\*\* | -0.628\*\*\* | 0.053 | -0.389\*\*\* | -0.100\*\* | 0.256\*\*\* | 0.226\*\*\* | 0.150\*\*\* | 0.226\*\*\* | **0.251** | 0.347\*\*\* | 0.319\*\*\* | 0.218\*\*\* | 0.205\*\*\* | 0.285\*\*\* |
| C20:3(*n-*6) | 0.338\*\*\* | 0.054 | -0.563\*\*\* | 0.363\*\*\* | 0.123\*\*\* | -0.446\*\*\* | -0.067\* | 0.625\*\*\* | 0.287\*\*\* | -0.360\*\*\* | 0.341\*\*\* | **0.244** | 0.943\*\*\* | 0.806\*\*\* | 0.805\*\*\* | 0.715\*\*\* |
| C20:4(*n*-6) | 0.375\*\*\* | 0.103\*\* | -0.572\*\*\* | 0.559\*\*\* | 0.278\*\*\* | -0.567\*\*\* | -0.153\*\*\* | 0.805\*\*\* | 0.254\*\*\* | -0.545\*\*\* | 0.075\* | 0.701\*\*\* | **0.246** | 0.883\*\*\* | 0.890\*\*\* | 0.806\*\*\* |
| C22:4(*n*-6) | 0.127\*\*\* | -0.088\* | -0.423\*\*\* | 0.028 | 0.023 | -0.230\*\*\* | -0.086\* | 0.388\*\*\* | 0.211\*\*\* | -0.119\*\* | 0.376\*\*\* | 0.542\*\*\* | 0.539\*\*\* | **0.250** | 0.936\*\*\* | 0.836\*\*\* |
| C22:5(*n*-3) | 0.276\*\*\* | 0.028 | -0.490\*\*\* | 0.225\*\*\* | 0.142\*\*\* | -0.359\*\*\* | -0.147\*\*\* | 0.576\*\*\* | 0.271\*\*\* | -0.351\*\*\* | 0.226\*\*\* | 0.668\*\*\* | 0.717\*\*\* | 0.605\*\*\* | **0.246** | 0.879\*\*\* |
| C22:6(*n*-3) | 0.110\*\* | -0.002 | -0.256\*\*\* | 0.219\*\*\* | 0.084\* | -0.201\*\*\* | -0.040 | 0.283\*\*\* | 0.211\*\*\* | -0.119\*\* | 0.104\*\* | 0.354\*\*\* | 0.372\*\*\* | 0.209\*\*\* | 0.282\*\*\* | **0.233** |

\**P-value* ≤ 0.05; \*\**P-value* ≤ 0.01; \*\*\**P-value* ≤ 0.001.

aFatty acids are expressed as percentage on the total fatty acids.

Supplementary Table S3**.** Standard errors of the genetic (above diagonal) and phenotypic correlations (below diagonal) between backfat fatty acids of the studied pig population.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Traitsa | C12:0 | C14:0 | C16:0 | C16:1 *cis-*7(*n-*9) | C16:1 *cis-*9(*n-*7) | C18:0 | C18:1 *cis-*9(*n-*9) | C18:2(*n-*6)  | C18:3(*n-*3) | C20:0 | C20:2(*n-*6) | C20:3(*n-*6) | C20:4(*n-*6) | C22:4(*n-*6) | C22:5(*n-*3) | C22:6(*n-*3) |
| C12:0 | - | 0.032 | 0.030 | 0.031 | 0.034 | 0.034 | 0.034 | 0.033 | 0.034 | 0.034 | 0.033 | 0.034 | 0.034 | 0.034 | 0.034 | 0.034 |
| C14:0 | 0.019 | - | 0.030 | 0.033 | 0.033 | 0.033 | 0.034 | 0.033 | 0.033 | 0.033 | 0.034 | 0.033 | 0.033 | 0.033 | 0.033 | 0.034 |
| C16:0 | 0.034 | 0.030 | - | 0.023 | 0.033 | 0.032 | 0.031 | 0.030 | 0.031 | 0.033 | 0.032 | 0.032 | 0.032 | 0.033 | 0.033 | 0.033 |
| C16:1*cis-7* (*n-*9) | 0.033 | 0.034 | 0.030 | - | 0.032 | 0.027 | 0.034 | 0.024 | 0.027 | 0.031 | 0.027 | 0.029 | 0.030 | 0.032 | 0.032 | 0.031 |
| C16:1*cis-9* (*n-*7) | 0.030 | 0.027 | 0.034 | 0.033 | - | 0.025 | 0.029 | 0.029 | 0.029 | 0.028 | 0.034 | 0.030 | 0.031 | 0.031 | 0.031 | 0.032 |
| C18:0 | 0.030 | 0.031 | 0.031 | 0.028 | 0.023 | - | 0.034 | 0.019 | 0.023 | 0.021 | 0.034 | 0.025 | 0.026 | 0.029 | 0.029 | 0.030 |
| C18:1*cis-*9 (*n-*9) | 0.033 | 0.032 | 0.031 | 0.034 | 0.034 | 0.032 | - | 0.034 | 0.034 | 0.034 | 0.032 | 0.034 | 0.034 | 0.034 | 0.034 | 0.034 |
| C18:2(*n-*6) | 0.031 | 0.034 | 0.027 | 0.023 | 0.033 | 0.027 | 0.032 | - | 0.014 | 0.018 | 0.031 | 0.020 | 0.022 | 0.027 | 0.027 | 0.027 |
| C18:3(*n-*3) | 0.033 | 0.034 | 0.033 | 0.033 | 0.034 | 0.033 | 0.034 | 0.032 | - | 0.012 | 0.030 | 0.014 | 0.018 | 0.025 | 0.024 | 0.026 |
| C20:0 | 0.030 | 0.031 | 0.034 | 0.030 | 0.030 | 0.028 | 0.034 | 0.029 | 0.034 | - | 0.033 | 0.014 | 0.017 | 0.024 | 0.023 | 0.026 |
| C20:2(*n-*6) | 0.034 | 0.031 | 0.026 | 0.034 | 0.031 | 0.034 | 0.033 | 0.033 | 0.034 | 0.033 | - | 0.032 | 0.032 | 0.033 | 0.033 | 0.033 |
| C20:3(*n-*6) | 0.032 | 0.034 | 0.028 | 0.032 | 0.034 | 0.030 | 0.034 | 0.026 | 0.032 | 0.032 | 0.032 | - | 0.011 | 0.020 | 0.020 | 0.024 |
| C20:4(*n-*6) | 0.031 | 0.034 | 0.028 | 0.028 | 0.033 | 0.028 | 0.034 | 0.020 | 0.033 | 0.028 | 0.034 | 0.024 | - | 0.016 | 0.015 | 0.020 |
| C22:4(*n-*6) | 0.034 | 0.034 | 0.031 | 0.034 | 0.034 | 0.033 | 0.034 | 0.031 | 0.033 | 0.034 | 0.031 | 0.029 | 0.029 | - | 0.012 | 0.019 |
| C22:5(*n-*3) | 0.033 | 0.034 | 0.030 | 0.033 | 0.034 | 0.032 | 0.034 | 0.028 | 0.033 | 0.032 | 0.033 | 0.025 | 0.024 | 0.027 | - | 0.016 |
| C22:6(*n-*3) | 0.034 | 0.034 | 0.033 | 0.033 | 0.034 | 0.033 | 0.034 | 0.033 | 0.033 | 0.034 | 0.034 | 0.032 | 0.031 | 0.033 | 0.033 | - |

aFatty acids are expressed as percentage on the total fatty acids.