**Twin Research and Human Genetics**

**The CODAtwins Project: The Cohort Description of Collaborative Project of Development of Anthropometrical Measures in Twins to Study Macro-Environmental Variation in Genetic and Environmental Effects on Anthropometric Traits**

Karri Silventoinen,Aline Jelenkovic, Reijo Sund, Chika Honda, Sari Aaltonen, Yoshie Yokoyama, Adam D. Tarnoki, David L. Tarnoki, Feng Ning, Fuling Ji, Zengchang Pang, Juan R. Ordoñana, Juan F. Sánchez-Romera, Lucia Colodro-Conde, S. Alexandra Burt, Kelly L. Klump, Sarah E. Medland, Grant W. Montgomery, Christian Kandler, Tom A. McAdams, Thalia C. Eley, Alice M. Gregory, Kimberly J. Saudino, Lise Dubois, Michel Boivin, Claire M. A. Haworth, Robert Plomin, Sevgi Y. Öncel, Fazil Aliev, Maria A. Stazi, Corrado Fagnani, Cristina D’Ippolito, Jeffrey M. Craig, Richard Saffery, Sisira H. Siribaddana, Matthew Hotopf, Athula Sumathipala, Timothy Spector, Massimo Mangino, Genevieve Lachance, Margaret Gatz, David A. Butler, Gombojav Bayasgalan, Danshiitsoodol Narandalai, Duarte L. Freitas, José Antonio Maia, K. Paige Harden, Elliot M. Tucker-Drob, Kaare Christensen, Axel Skytthe, Kirsten O. Kyvik, Changhee Hong, Youngsook Chong, Catherine A. Derom, Robert F. Vlietinck, Ruth J. F. Loos, Wendy Cozen, Amie E. Hwang, Thomas M. Mack, Mingguang He, Xiaohu Ding, Billy Chang, Judy L. Silberg, Lindon J. Eaves, Hermine H. Maes, Tessa L. Cutler, John L. Hopper, Kelly Aujard, Patrik K. E. Magnusson, Nancy L. Pedersen, Anna K. Dahl Aslan, Yun-Mi Song, Sarah Yang, Kayoung Lee, Laura A. Baker, Catherine Tuvblad, Morten Bjerregaard-Andersen, Henning Beck-Nielsen, Morten Sodemann, Kauko Heikkilä, Qihua Tan, Dongfeng Zhang, Gary E. Swan, Ruth Krasnow, Kerry L. Jang, Ariel Knafo-Noam, David Mankuta, Lior Abramson, Paul Lichtenstein, Robert F. Krueger, Matt McGue, Shandell Pahlen, Per Tynelius, Glen E. Duncan, Dedra Buchwald, Robin P. Corley, Brooke M. Huibregtse, Tracy L. Nelson, Keith E. Whitfield, Carol E. Franz, William S. Kremen, Michael J. Lyons, Syuichi Ooki, Ingunn Brandt, Thomas Sevenius Nilsen, Fujio Inui, Mikio Watanabe, Meike Bartels, Toos C. E. M. van Beijsterveldt, Jane Wardle, Clare H. Llewellyn, Abigail Fisher, Esther Rebato, Nicholas G. Martin, Yoshinori Iwatani, Kazuo Hayakawa, Finn Rasmussen, Joohon Sung, Jennifer R. Harris, Gonneke Willemsen, Andreas Busjahn, Jack H. Goldberg, Dorret I. Boomsma, Yoon-Mi Hur, Thorkild I. A. Sørensen, and Jaakko Kaprio

**Supplementary Table 1 (see over)**

|  |  |  |
| --- | --- | --- |
| **Supplementary Table 1Basic Characteristics of the Twin Cohorts Participating in the CODATwins Project** |  |  |
| **Cohort name** | **Number of twin individuals** | **% of females** | **Number of complete twin pairs** | **% of MZ pairs** | **% of OSDZ pairs** | **Age range**  | **Birth cohorts** | **Identification of twin pairs** | **Zygosity measure** | **Height and weight measures** | **Birth anthropometric measures** |
| **Africa** |  |  |  |  |  |  |  |  |  |  |  |
| Guinea-Bissau Twin Study | 253 | 53 | 108 | 15 | 58 | 0–3 | 2009–2013 | Hospitals, demographic surveillance sites | Q | Measured | Measured length and weight |
| **Australia** |  |  |  |  |  |  |  |  |  |  |  |
| Australian Twin Registry | 2,536 | 78 | 1,210 | 72 | 9 | 18–97 | 1916–1996 | Media, Australian Multiple Birth Association, hospitals | DNA and Q | Self-reported | Self-reported weight |
| Peri/Postnatal Epigenetic Twins Study (PETS) |  443 | 53 | 221 | 41 | 26 | 1–7 | 2007–2009 | Twin pregnancies in three hospitals | DNA | Measured | Measured lengths and weight |
| Queensland Twin Register | 23,456 | 59 | 10,685 | 44 | 24 | 6–95 | 1900–2002 | Birth records | DNA and Q | Measured and self-reported | NA |
| **East-Asia** |  |  |  |  |  |  |  |  |  |  |  |
| Guangzhou Twin Eye Study | 1,122 |  52 | 561 | 63 | 19 | 6–19 | 1990–2002 | Population registry | DNA and Q | Measured | NA |
| Japanese Twin Cohort | 4,341  | 51 | 2,169 | 62  | 15 | 1–12 | 1950–2003 | High school applicants | Q | Parentally reported | Parentally reported length and weight |
| Korean Twin-Family Register | 1,353 | 62 | 672 | 82 | 0 | 20–79 | 1934–1990 | Population registry | DNA and Q | Measured | NA |
| Mongolian Twin Registry | 166 | 49 | 83 | 43 | 22 | 0–65 | 1948–2012 | Birth records | Q | Self-reported | Self-reported length and weight |
| Osaka University Aged Twin Registry | 689 | 60 | 288 | 61 | 5 | 20–98 | 1915–1993 | School records | DNA and Q | Self-reported | NA |
| South Korea Twin Registry  | 2,278 | 54 | 1,139 | 59 | 20 | 7–26 | 1983–2003 | Schools, hospitals, media and childcare agencies | Q | Self-reported | NA |
| Qingdao Twin Registry (adults) | 986 | 51 | 493 | 61 | 20 | 23–81 | 1925–1984 | Medical records, schools and media | DNA and blood type | Measured | NA |
| Qingdao Twin Registry (children) | 1,175 | 52 | 587 | 53 | 20 | 8–17 | 1989–1998 | Medical records, schools and media | DNA and blood type | Measured | Parentally reported length and weight |
| West Japan Twins and Higher Order Multiple Births Registry | 1,552 | 53 | 767 | 53 | 25 | 0–45 | 1964–2013 | Contacting public health centers | Q | Parentally reported | Parentally reported length and weight |
| **Europe** |  |  |  |  |  |  |  |  |  |  |  |
| Adult Netherlands Twin Registry | 9,645 | 64 | 4,786 | 50 |  22 | 18–91 | 1918–1994 | City council registers, media, websites and social media | DNA and Q | Measured and self-reported | Self-report birth weight |
| Berlin Twin Register  | 614 | 58 | 307 | 66 | 12 | 10–78 | 1925–1990 | Media | DNA and Q | Self-reported | NA |
| Bielefeld Longitudinal Study of Adult Twins | 2,366 | 75 | 1,088 | 66 | 10 | 14–80 | 1914–1980 | Registration offices, media, twin clubs | Q | Self-reported | NA |
| Danish Twin Cohort | 34,665 | 54 | 11,667 | 29 | 31 | 30–100 | 1895–1982 | Birth registers, population registers and medical birth registers | Q | DNA and Q | NA |
| East Flanders Prospective Twin Survey | 803 | 52 | 379 | 64 | 11 | 18–34 | 1964–1982 | Birth records | Chorionicity,blood and DNA | Measured | Measured weight |
| Finnish Older Twin Cohort |  29,568 | 51 | 13,422 | 28 | 11 | 18–101 | 1880–1957 | Birth records | Q | Self-reported | NA |
| FinnTwin12 | 4,954 | 50 | 2,467 | 34 | 33 | 10–27 | 1983–1987 | Birth records | Q | Self-reported | Parentally reported length and weight |
| FinnTwin16 | 5,701 | 52 | 2,846 | 32 | 35 | 16–37 | 1974–1979 | Birth records | Q | Self-reported | Parentally reported length and weight |
| Gemini Study | 3,495 | 51 |  1,737 | 33 | 33 | 0–5 | 2007 | Birth records | DNA and Q | Measured | Parentally reported length and weight  |
| Genesis 12–19 study | 1,662 | 55 | 747 | 36 | 33 | 13–28 | 1985–1988 | Birth records | DNA and Q | Self-reported | NA |
| Hungarian Twin Registry | 825 | 65 | 389 | 59 | 13 | 2–82 | 1927–2012 | Twin festivals, media | DNA and Q | Measured | Self-reported weight |
| Italian Twin Registry | 17,361 | 56 | 7,432 | 44 | 25 | 1–90 | 1917–2007 | Municipality records, disease registries and hospitals | DNA and Q | Measured and self-reported | Parentally reported length and weight  |
| Murcia Twin Registry | 2,258 | 57 | 999 | 35 | 27 | 41–71 | 1939–1966 | Health records | DNA and Q  | Measured and self-reported | Self-reported weight |
| Norwegian Twin Registry | 13,941 | 53 | 5,254 | 46 | 0 | 20–75 | 1915–1960 | Birth records | Q | Self-reported | Self-reported weight |
| Portugal Twin Cohort | 1,789 | 50 | 803 | 42 | 23 | 3–20 | 1982–2004 | Schools, media, city halls, twin meetings | DNA and Q | Measured | NA |
| Swedish twin cohorts | 65,995 | 53 | 29,820 | 31 | 19 | 14–99 | 1886–1958 | Birth records | Q | Self-reported | NA |
| Swedish Young Male Twins Study (adults) | 2,151 | 0 | 1,074 | 57 | 0 | 17–29 | 1973–1979 | Birth records | Q | Self-reported | Measured length and weight |
| Swedish Young Male Twins Study (children) | 898 | 0 | 352 | 63 | 0 | 0–23 | 1973–1979 | Birth records | Q | Measured | Measured length and weight |
| TCHAD-study | 2,570 | 52 | 1,265 | 40 | 30 | 7–21 | 1976–1978 | Birth records | Q | Parentally and self-reported | NA |
| Twins Early Development Study | 18,354 | 51 | 9,065 | 34 | 33 | 2–17 | 1994–1996 | Birth records | DNA and Q | Parentally and self-reported | Parentally reported length and weight |
| TwinsUK | 9,034 | 88 | 4,316 | 51 | 1 | 18–88 | 1917–1990 | media, websites and social media | DNA and Q | Measured and self-reported | NA |
| Young Netherlands Twin Registry | 34,524 | 50 | 17,237 | 33 | 33 | 1–20 | 1986–2005 | Association of parents of multiples, commercial organizations websites and social media | DNA and Q | Parental and self-reported | Parentally reported length and weight as assessed by obstetrician/midwife |
| **South-Asia and Middle-East** |  |  |  |  |  |  |  |  |  |  |
| Longitudinal Israeli Study of Twins | 995 | 49 | 489 | 23 | 36 | 3–10 | 2003–2007 | Birth records | DNA and Q | Measured | NA |
| Sri Lanka Twin Registry | 2,485 | 56 | 933 | 45 | 27 | 20–88 | 1925–1993 | Door-to-door visit survey, newsletters, cultural activities, media, birth records | DNA and Q | Self-reported | NA |
| Turkish Twin Study | 584 | 46 | 288 | 37 | 27 | 14–69 | 1942–1996 | Birth records | Q | Self-reported | NA |
| **North-America** |  |  |  |  |  |  |  |  |  |  |  |
| Boston University Twin Project | 627 | 47 | 313 | 46 | 0 | 2–3 | 2001–2004 | Birth records | DNA | Measured | Parentally reported length and weight |
| California Twin Program | 27,237 | 58 | 13,384 | 39 | 26 | 17–91 | 1908–1982 | Birth records | Q | Self-reported | NA |
| Carolina African American Twin Study of Aging | 532 | 59 | 249 | 35 | 27 | 22–88 | 1910–1979 | Birth records | DNA and Q | Measured | Self-reported weight |
| Colorado Twin Registry | 2,861 | 48 | 1,421 | 48 | 19 | 11–29 | 1979–1991 | Birth records | DNA and Q | Measured | Measured weight |
| Michigan State University Twin Registry | 22,172 | 49 | 10,253 | 30 | 34 | 2–51 | 1961–2010 | Birth records | DNA and Q | Parentally and self-reported; Measured | Parentally and self-reported weight |
| Mid Atlantic Twin Registry | 11,801 | 65 | 5,743 | 46 | 23 | 16–93 | 1894–1987 | Birth records, schools, hospitals and events | DNA and Q | Self-reported | NA |
| Minnesota Twin Family Study  | 1,511 | 50 | 755 | 64 | 0 | 10–19 | 1972–1984 | Birth records | DNA | Measured | Parentally reported weight |
| Minnesota Twin Registry | 10,122 | 55 |  3,998 | 40 | 23 | 26–63 | 1923–1958 | Birth records | Q | Self-reported | Weight based on birth certificate |
| NAS-NRC Twin Registry | 27,093 | 0 | 13,540 | 44 | 0 | 15–82 | 1917–1927 | Birth records | Q and DNA | Measured and self-reported | NA |
| Quebec Newborn Twin Study | 1,342 | 50 | 668 | 38 | 30 | 0–14 | 1997–1997 | Birth records | DNA and Q | Measured and parentally reported | Measured length and weight |
| SRI-international | 1,092 | 70 | 539 | 75 | 8 | 17–83 | 1921–1997 | Community based advertising | Q | Measured and self-reported | NA |
| Texas Twin Project | 565 | 51 | 282 | 35 | 30 | 8–20 | 1991–2003 | Schools | Q | Self-reported | NA |
| University of British Columbia Twin Project | 1,450 | 67 | 719 | 53 | 13 | 15–86 | 1905–1976 | Media | Q | Self-reported | NA |
| University of Southern California Twin Study | 1,541 | 50 | 770 | 44 | 26 | 9–22 | 1990–1995 | Schools, birth and voter records | DNA and Q | Measured | Parentally reported length and weight |
| University of Washington Twin Registry | 15,940 | 61 | 7,921 | 53 | 22 | 18–97 | 1914–1995 | The Washington State Department of Licensing application system | DNA and Q | Self-reported | NA |
| Vietnam Era Twin Study of Aging | 1,237 | 0 | 614 | 57 | 0 | 51–67 | 1943–1955 | Department of Defense and Department of Veteran Affairs databases | DNA and Q | Measured | NA |

Note: Q = questionnaire; MZ = monozygotic; OSDZ = opposite-sex dizygotic.