

## Cohort profile: Birth Cohort - Gene and Environment Interaction Study of TMDU (BC-GENIST)

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**Background and purpose:** Japan has the highest proportion of low birth-weight infants as well as elderly adults in the world. Effective preemptive measures during the reproductive and perinatal period are much in need to prevent age-associated intractable diseases. It is crucial to accumulate epidemiological data from prospective birth cohorts, and to analyze how environment interact with fetal genome and modulate its phenotype, which is still a burgeoning field of research in Japan. The prime object of our Birth Cohort - Gene and ENvironment Interaction Study of TMDU (BC-GENIST) is to evaluate the effects of perinatal environmental variables such as maternal nutrition and mental health on the epigenetic state of mothers and their offspring.

**Methods:** BC-GENIST is being currently conducted at Tokyo Medical and Dental University Hospital, Tokyo (from Nov. 2015). Pregnant women (aged 20 years and above) are recruited at 8-24 weeks and being followed through. Biospecimen includes maternal blood, umbilical cord, cord blood and neonatal dried blood spot. Health status including diet, anthropometry, and mental well-being, and other data are also obtained.

**Results:** Fifty-one women were recruited by May 2016, and 32 women agreed to participate. Twenty-six women completed their 3-day dietary records. Most women (22 women) completed college or further. The average intakes of the three records were used as the woman's intake. Median energy intake was 1644 (Inter Quartile Range:1548, 1769) kcal/day, and median folate intake was 222 (IQR:201, 345) µg/day. Fourteen women reported taking folic acid supplements.

**Conclusion:** The women in our current study were well educated, but their dietary intake status was insufficient to meet the demands of pregnancy. We plan to examine the relationship between dietary status and epigenomic status of both mother and child, together with their birth outcomes.