

## 050P SUSCEPTIBLE HD CYTOKINE PHENOTYPES IN TWINS

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Environment plays a role in HD risk but genetic factors also contribute. We hypothesized that Th2/Th1 skewing was responsible for the increased risk of HD in identical twins since

HD cases have normal humoral but depressed cellular immunity. Healthy identical twins of HD cases serve as genetically identical pre-disease surrogates in which to measure possible susceptibility phenotypes unaffected by disease. We examined Th1 (interleukin-12 [IL-12], interleukin-2 [IL-2], interferon-g [INF-g], and tumor growth factor- $\beta$  [TGF- $\beta$ ]) and Th2 (interleukin-6 [IL-6], interleukin-8 [IL-8], and interleukin-10 [IL-10]) levels in 54 unaffected identical twins of HD cases compared to those of age and race matched controls using an analysis of variance for unequal sample size and adjusted for gender and age stratifying by zygosity and histology. While no significant differences between cotwins' and controls' cytokine levels were observed, cotwins of mixed cellularity (MC) cases and lymphocyte predominant cases (LP) HD cases had significantly lower levels of IL-12 (both unstimulated and PHA-stimulated) compared to matched controls. Cotwins of MC cases also had significantly lower levels of INF-g but higher levels of IL-6. Cotwins of nodular sclerosis (NS) HD cases had significantly higher levels of unstimulated INF-g compared to matched controls. PHA-stimulated cytokine levels were uni-formly, but not significantly, higher in cotwins of NS cases compared to controls. Thus, an imbalance in the Th2/Th1 ratio appears to be present in healthy twins of MC and LP HD cases and may increase susceptibility to these types of HD.

## 051P ASCERTAINMENT OF TWINS IN THE WESTERN AUSTRALIAN TWIN REGISTER USING RECORD LINKAGE

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**Objectives.** To describe a) the methods of construction of the population-based West Australian (WA) Twin Register and b) the maternal twins identified through this process.

**Methods.** The WA Twin Child Health (WATCH) study uses data from the WA Twin Register of multiple births born in WA from 1980–1992 inclusive. Families with a multiple birth were ascertained through probabilistic record linkage of birth records to form maternally linked sibships.

**Results.** The linkage process led to the identification of women who appear to be twins and/or siblings. Population rates of multiple births in the 1960s would result in an expected 543 sets of same sex twins. Linkage found 305 (56%) sets of apparent maternal twins. Of those linked maternal twins, 22 (31%) out of the 72 nulliparous twin mothers, had their first birth within one year of a birth to their co-twin and 54 (75%) had at least one birth in the same hospital. Of the 2,848 WATCH study responder mothers, 60 (2%) are twins, with 26 (43%) monozygotic, 20 (33%) dizygotic (DZ) same sex and 14 (23%) DZ male-female twins.

**Conclusions.** Probabilistic record linkage is a viable method of ascertainment of twins for a Twin Register and can result in maternal twins and siblings being identified.

## 052P TWINS IN MAYA MYTHOLOGY

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**Objective.** To describe the theme of twinship in the Popol Vuh.

**Results.** The Popol Vuh, the most important text in the native languages of the Americas, narrates the cosmogony, mythology, traditions and history of the Quiche Indians, a Maya tribe that lived in the highlands of Guatemala in pre-conquest era. Three sets of twins are mentioned. Hun-Hunahpu and Vucub-Hunahpu, first set, are summoned to play ball with the Lords of the Underworld, Xibalba, and are killed by the death gods. The head of Hun-Hunahpu is hung in a calabash tree. One day Xquic, a daughter of one the death gods, walked past the calabash tree and the desiccated head spat into her hand. She magically became pregnant, fled into the Middleworld and gave birth to the Hero Twins, Hunahpu and Xbalanque, second set. The Hero Twins grow up, defeat various opponents including their jealous rival older pair of twin half brothers: Hun-Chuen and Hun-Batz, third set, by transforming them into monkeys. The Hero Twins are summoned to the Underworld to play ball. They overcome the Lords of Xibalba by a series of tricks, ending in the destruction of the death gods. The Hero Twins then dug up the bodies

of Hun-Hunahpu and Vucub-Hunahpu and revived them, after which they rose up to the sky to become the Sun and the Moon.

**Conclusions.** Twins are a central and recurring theme in Maya mythology and represent one of the earliest religious beliefs of mankind.

## 053P ZYGOSITY DETERMINATION: WHY IS IT SO IMPORTANT?

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Throughout history the origin of twins has provoked intense interest and speculation and it is only relatively recently that scientific research has clarified their development. It is medically important to establish chorionicity — so monozygotic twins can be closely monitored for conditions such as twin to twin transfusion syndrome (TTTS). Chorionicity should be determined routinely in the first trimester of pregnancy, besides the medical reasons there still appears to be an underestimation of the need for parents and children themselves to know their zygosity. Parents are still being told in some cases that if their twins are dichorionic, then the babies cannot be identical. In fact one third of monozygotic twins are dichorionic. Until the development of DNA testing the examination of certain markers in the blood could give a result of up to 99% accuracy of monozygosity, but now the new DNA testing procedures are more reliable and fortunately, though still expensive, increasingly widely available. All the parents who contacted the Multiple Births Foundation (MBF) for zygosity testing were asked what information they had received regarding chorionicity and zygosity, and particularly whether they were told that their dichorionic twins were not identical. The MBF promotes the need for professional education regarding zygosity determination and is seeking to establish the availability of routine testing in all maternity units.

## 054P FEASIBILITY OF USING BIRTH RECORDS FOR RECRUITING OLDER TWINS FOR THE SRI LANKAN TWIN REGISTRY

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To expand the National Twin Registry of Sri Lanka to a population based register, we examined the feasibility of tracing older twins by inspecting birth records and recruiting them by postal invitation and in-person contact.

**Methods.** Birth records at a divisional secretariat reported from 2 maternity hospitals between the years of 1954–1970 were scrutinised randomly to identify twins. These 2 hospitals had the highest twin delivery rates for the whole country. We identified 310 twin pairs and a postal questionnaire was sent. Research assistants visited a cohort of non-respondents (71) in the postal survey.

**Results.** 620 twins were identified after perusing 20,700 birth records. Estimated twinning rate, was 14.98 twin births for 1000 registered births for a year. In the postal survey, 37 (12%) responded and 62 letters were returned (20%), as twins were no longer in the postal address. Both were living in 20 pairs, one each in 15 pairs, and both dead in 2 pairs. In the field visits, 42 (59.2%) addresses were located. Information was available on 16-twin pairs Both were living in 8 pairs, one each in 4 pairs, and both dead in 4 pairs. At least one twin was traced in 10 pairs (14%). Both postal and field survey gave a low yield. This finding is different from tracing younger twins born between 1985–1997 by using the same methods. Migration, urbanization and development in the country may have affected tracing older twins' from the birth record addresses, which are decades old.

## 055F BIRTH WEIGHT AND TRACKING OF BLOOD PRESSURE: A 15-YEAR FOLLOW-UP STUDY OF DUTCH ADOLESCENT TWINS

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In a sample of 17-year-old Dutch twins, we observed an inverse relation between birth weight and blood pressure. Blood pressure was measured in the laboratory during rest and mental stress conditions; birth weight was obtained from the mothers of twins. Intrapair differences in birth weight were negatively associated with differences in systolic BP in DZ, but not in MZ twins (Yzerman et al., 2000), suggesting genetic mediation of the association between birth weight and blood pressure. Fifteen years later, the twin sample was approached to participate in a laboratory study of brain