Twins 2025

"Twins in Science and Society : Bridging Multiple Frontiers"

The joint 8th World Congress on
Twin Pregnancy:
A Global Perspective

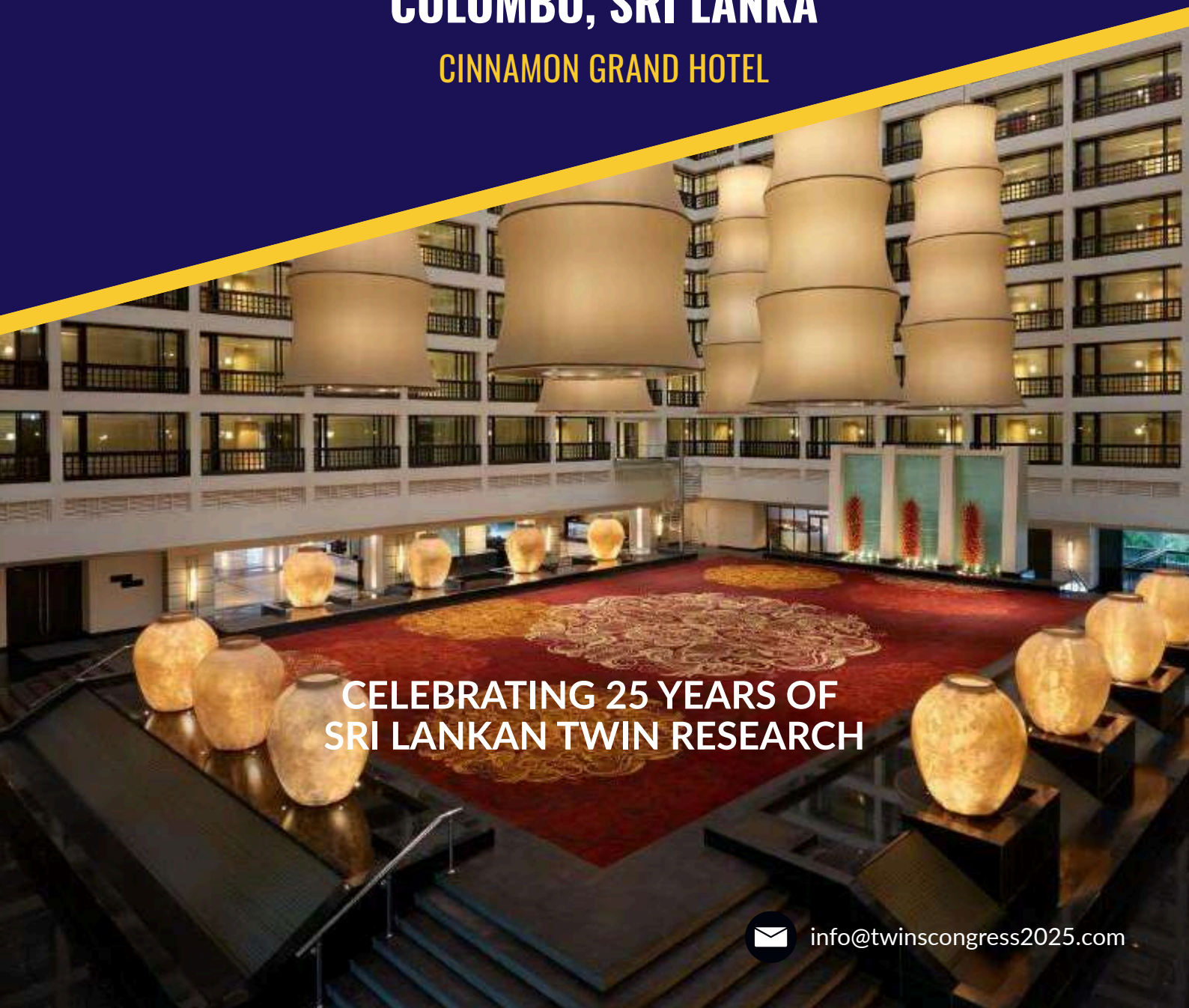
&

The 20th Congress of the
International Society for
Twin Studies [ISTS]

10th-12th AUGUST 2025

COLOMBO, SRI LANKA

CINNAMON GRAND HOTEL



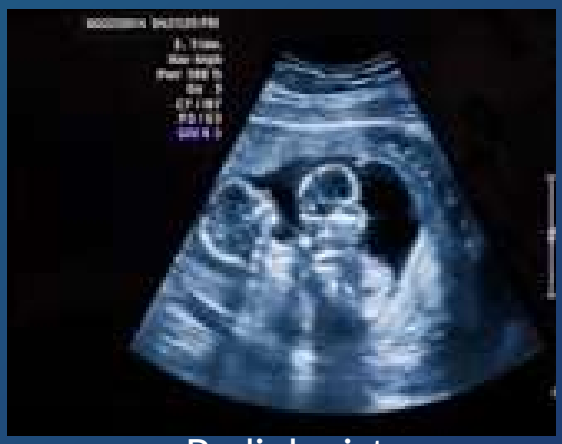
CELEBRATING 25 YEARS OF
SRI LANKAN TWIN RESEARCH

info@twinscongress2025.com

Twins

Whose territory, is it?

Neonatologist



Radiologists

Geneticists

Epidemiologists

Obstetricians

Psychiatrists

Sociologists Statisticians Educators

Twins and their families and advocates

IT'S EVERYBODY'S

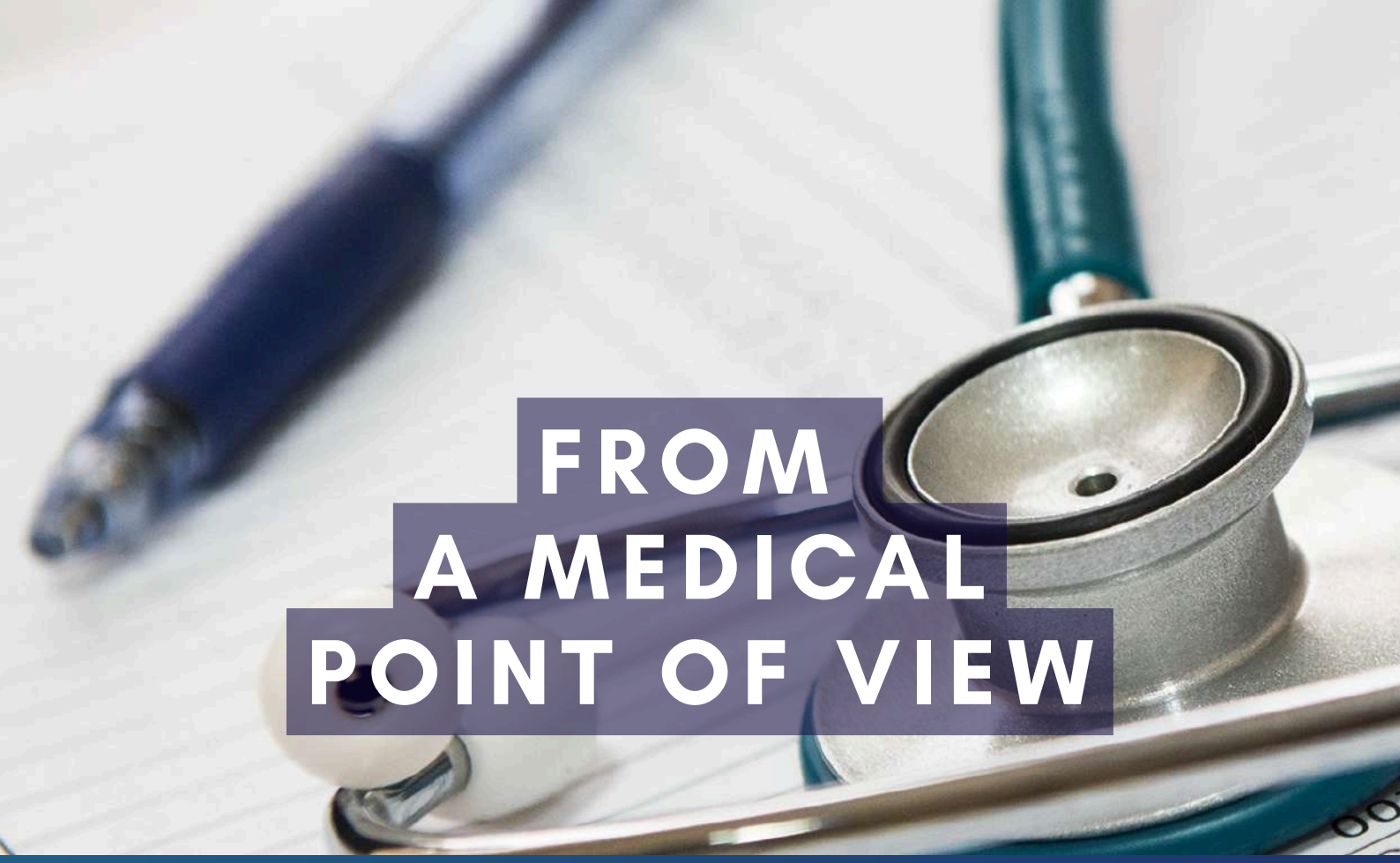
FROM A PAEDIATRIC AND OBSTETRIC POINT OF VIEW

For many parents the joy of having twins and triplets is reduced by the unexpected emotional as well as physical and financial stresses which they experience with children who may suffer from premature and low birth weight, and who have a higher risk of language delay and disability.

TWINS ARE ASSOCIATED WITH

- Increased premature birth[1] (singleton rate 28-36 weeks 1.4%, twins 18.2%)
- Increased low birth weight[3] (singleton rates <2500g 6%, twins 55%)
- Increased intra uterine growth retardation. [1]
- Increased birth defects. [1]
- Increased birth complications. [1]
- Monozygotic twins, twin girls, and male twins with low birth weight, particularly at risk for below-average mental and physical growth[4]
- Data set for 60 countries presented an early newborn mortality (number of deaths per 100 livebirths) of 2% in singletons and of 12.1% in twins [5]
- The increasing number of twin births is a matter of international concern for two reasons: first the differential rates of preterm delivery and low birthweight among twins compared to singletons; and second, the inordinate contribution of these infants to overall infant mortality, morbidity, and long-term disability. [6]
- Intrauterine death of one fetus in a multiple gestation is associated with significant morbidity and mortality in the surviving twin.[7]

1. Freitas MJ, Maneta Travanca IS, García-Fernández R. Parents' Needs When Experiencing the Transition to Twin Parenthood. Healthcare. 2024; 12(12):1173. https://doi.org/10.3390/healthcare12121173
2. Tiril Tingleff, Räisänen S, Åse Vikanes, Sandvik L, Meryam Sugulle, Gulim Murzakanova, et al. Different pathways for preterm birth between singleton and twin pregnancies: a population-based registry study of 481 176 nulliparous women. 2022 Nov 21;130(4):387–95.
3. Hassan S, Jahanfar S, Inungu J, Craig JM. Low birth weight as a predictor of adverse health outcomes during adulthood in twins: a systematic review and meta-analysis. Syst Rev. 2021 Jun 24;10(1):186. doi: 10.1186/s13643-021-01730-5. PMID: 34167585; PMCID: PMC8228924.
4. Ali Akerman B. Twins: are they at risk. Acta Genet Med Gemellol 1991; 40: 29-
5. Bellizzi S, Sobel H, Betran AP, Temmerman M. Early neonatal mortality in twin pregnancy: Findings from 60 low- and middle-income countries. J Glob Health. 2018 Jun;8(1):010404. doi: 10.7189/jogh.08.010404. PMID: 29423189; PMCID: PMC5782831.
6. Torres C, Caporali A, Pison G. The Human Multiple Births Database (HMBD). Demographic Research. 2023 Feb 1;48:89–106.
7. Stefanescu BI, Adam AM, Constantin GB, Trus C. Single Fetal Demise in Twin Pregnancy-A Great Concern but Still a Favorable Outcome. Diseases. 2021 Apr 29;9(2):33. doi: 10.3390/diseases9020033. PMID: 33946946; PMCID: PMC8161807.



FROM A MEDICAL POINT OF VIEW

In efforts to solve the problem on etiology of disease, twin studies have contributed greatly, since the early days of human genetic studies.

van Dongen J, Slagboom PE, Draisma HHM, Martin NG, Boomsma DI. The continuing value of twin studies in the omics era. Nature Reviews Genetics [Internet]. 2012 Jul 31;13(9):640–53. Available from: https://www.nature.com/articles/nrg3243?cacheBust=1508265669155

FROM A SCIENTIFIC POINT OF VIEW

Erasing the global divide in health research

The full potential of twins in epidemiology will only be realised when international collaborations occur, which will enable scientific questions to be addressed with substantial scientific power. International collaborations have become an integral part of epidemiology, and it is hoped that this will also be the case for genetic epidemiology and twin research in the future.

Collaboration provides answers relevant to developing and developed worlds

1. Nyangulu WJ. Global health collaborative research: beyond mandatory collaboration to mandatory authorship. Global Health Research and Policy [Internet]. 2023 Nov 22;8(1). Available from: https://doi.org/10.1186/s41256-023-00334-x
2. Miao L, Larivière V, Lee B, Ahn YY, Sugimoto CR. Persistent hierarchy in contemporary international collaboration. arXiv (Cornell University) [Internet]. 2024 Oct 16; Available from: http://arxiv.org/abs/2410.13020

- Cardiometabolic risk cannot be universally captured in a construct such as metabolic syndrome, but cardiometabolic risk is culturally, ethnicity and sex-specific with distinct etiological pathways.
- Conclusion: In the Sri Lankan population, distinct clinical profiles have emerged, suggesting that cardiometabolic risk is more complex than a single metabolic syndrome construct.
- The findings did not support the metabolic syndrome construct. Instead, distinct clinical profiles were identified for men and women, suggesting different etiological pathways.

PLOS ONE

RESEARCH ARTICLE

Cardiometabolic risk profiles in a Sri Lankan twin and singleton sample

Lisa Harber-Aschan[1,2*], Ioannis Bakolis[3,4], Nicholas Glozier[5], Khalida Ismail[1], Kaushalya Jayaweera[6], Gayani Pannala[6], Carmine Pariante[7], Fruhling Rijsdijk[8], Sisira Siribaddana[9], Athula Sumathipala[10], Helena M. S. Zavos[11], Patricia Zunszain[7], Matthew Hotopf[1,12]

FROM AN EPIDEMIOLOGICAL POINT OF VIEW

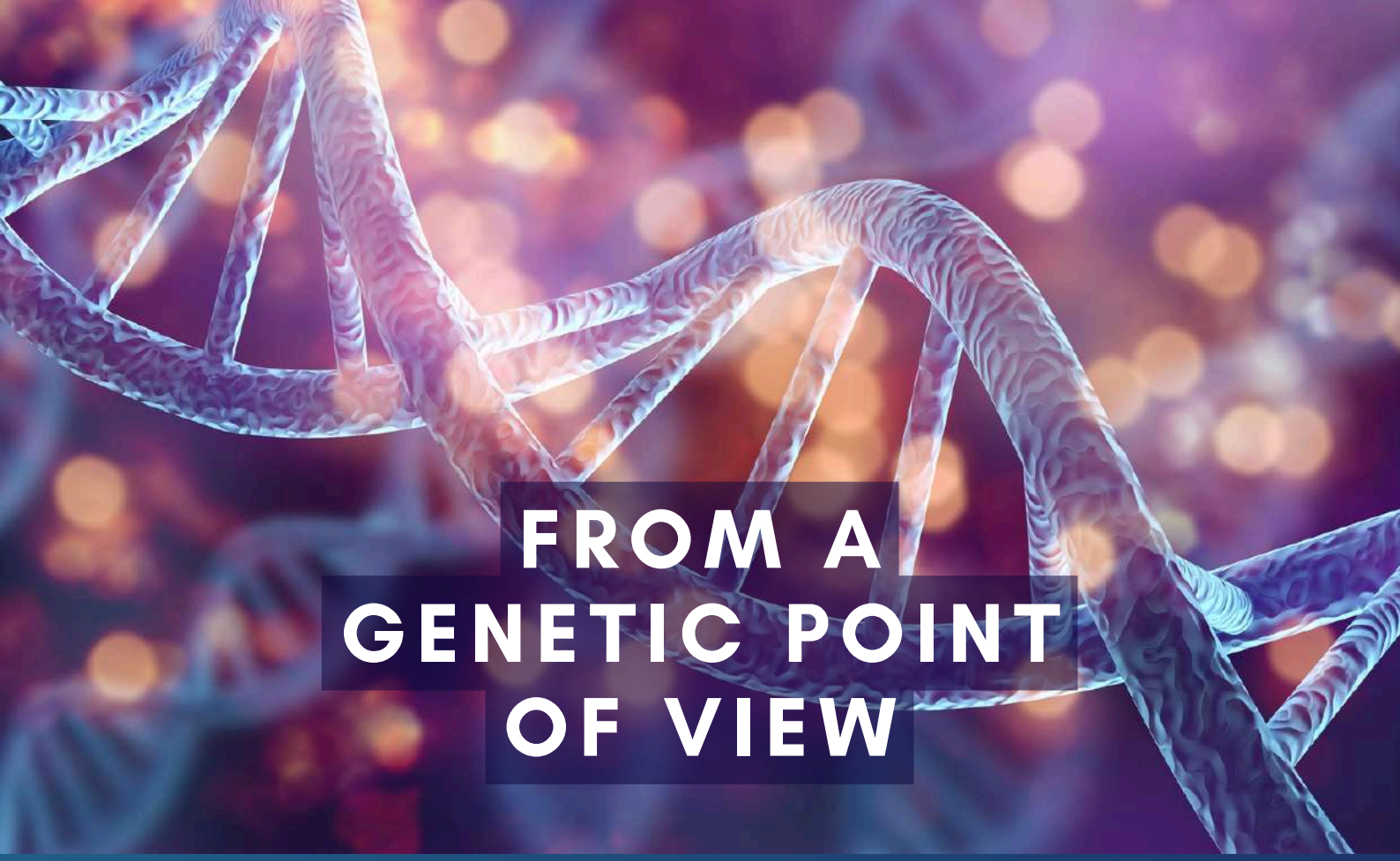
Twin study designs owe their popularity to having the ability to refute, in an efficient and convincing manner, the null hypothesis that genetic factors do not explain variation in a trait. If the correlation between monozygotic pairs is significantly greater (in a statistical sense) than between dizygotic pairs of the same sex, then under certain assumptions, the alternative hypothesis that genetic factors do play a role in trait variation is preferred to the null hypothesis. In genetic epidemiology, twins are of special interest because they offer an "experiment of opportunity".

These pairs of individuals of the same age, who share all or, on average, half their genes can be studied from the viewpoint of,

- their similarity in disease state,
- their similarity in disease determinants or risk factors,
- a difference in their disease state, and
- a difference in their exposure to risk factor(s).

Each of these approaches can be used to address questions about disease etiology. Twins are particularly useful for longitudinal studies, as they generally know they are of special scientific interest and so are usually not averse to being approached more than once.

1. Hopper JL. The epidemiology of genetic epidemiology. Acta Genet Med Gemellol.1992; 41: 261-273



FROM A GENETIC POINT OF VIEW

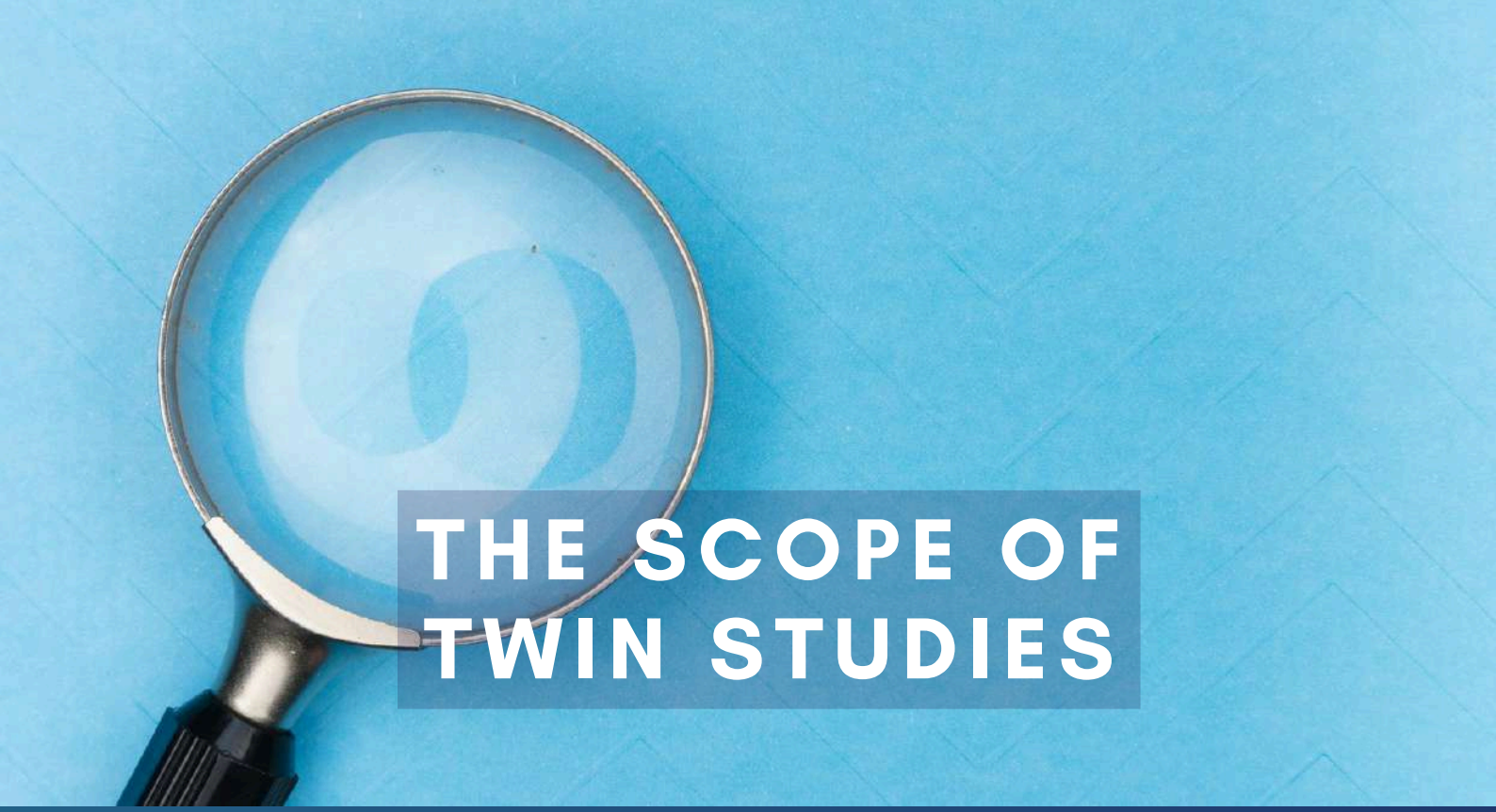
Twin studies may be defined as a " high powered" branch of genetics because when two or more identical siblings are affected by the same disease and external factors have been excluded as the cause, then the disease is most definitely a hereditary one and, as such, its origin can be traced back in the genealogical tree of that family on either the paternal or maternal side or on both sides.

van Dongen J, Slagboom PE, Draisma HH, Martin NG, Boomsma DI. The continuing value of twin studies in the omics era. Nat Rev Genet. 2012 Sep;13(9):640-53. doi: 10.1038/nrg3243. Epub 2012 Jul 31. PMID: 22847273.

FROM A SOCIOLOGICAL PONT OF VIEW

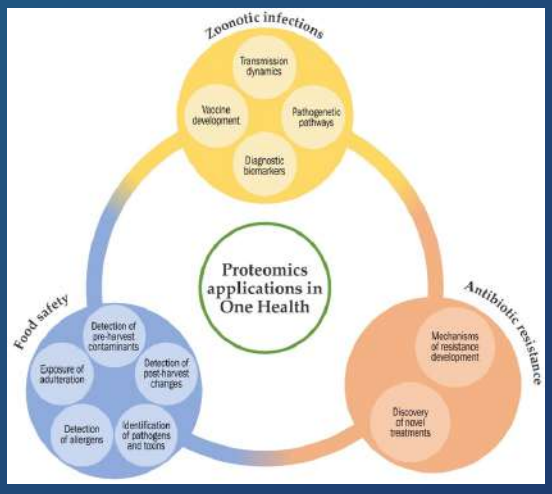
The arrival of twins has an economic, social and psychological impact on families of twins

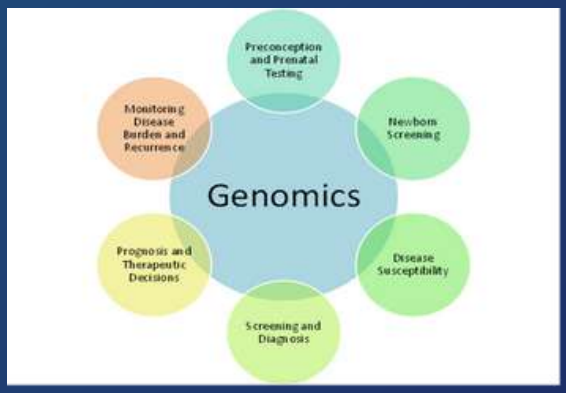
Freitas MJ, Maneta Travanca IS, García-Fernández R. Parents' Needs When Experiencing the Transition to Twin Parenthood. Healthcare (Basel). 2024 Jun 11;12(12):1173. doi: 10.3390/healthcare12121173. PMID: 38921288; PMCID: PMC11203324.

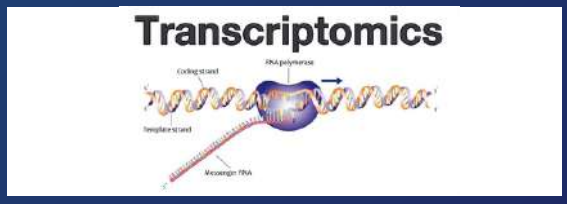


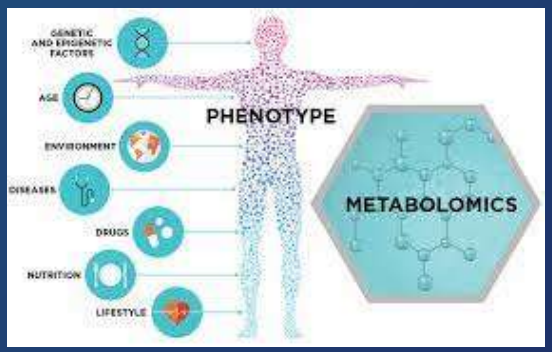
THE SCOPE OF TWIN STUDIES

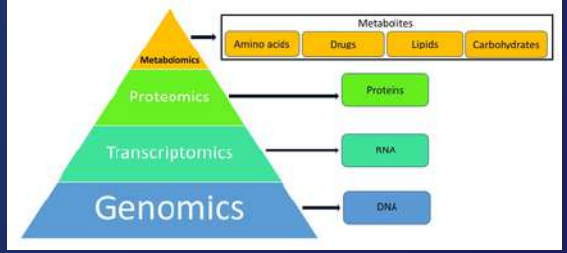
The Big Picture





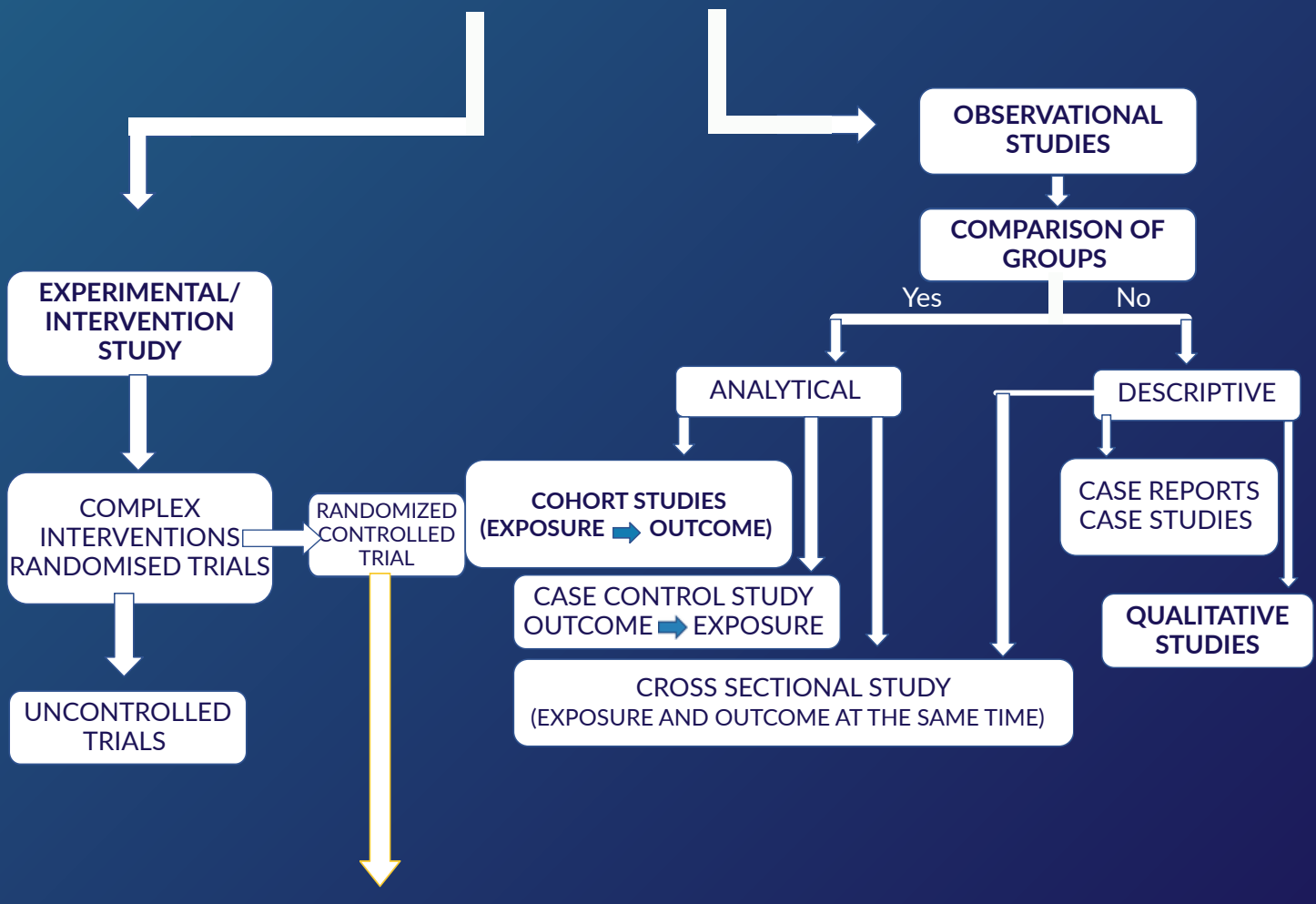






WHAT IS THE PLACE OF TWINS IN RESEARCH?

WHERE CAN WE INCLUDE TWINS IN MAIN TYPES OF STUDY DESIGNS?



BEYOND DRUG TRIALS

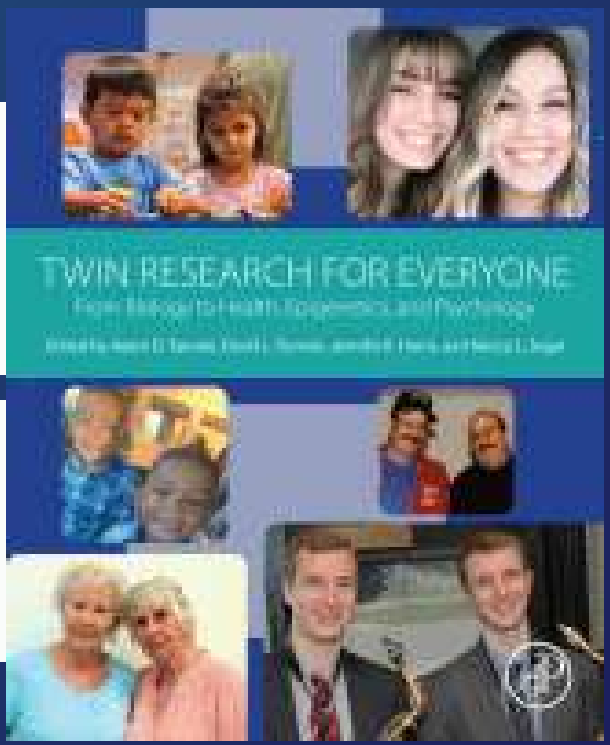
BEYOND DRUG TRIALS

BEHAVIOURAL TRIALS

Twin Research and Human Genetics
page 1 of 6 ▮ © The Author(s) 2017 ▮ doi:10.1017/thg.2017.67

Twins as Participants in Randomized Controlled Trials: A Review of Published Literature

Athula Sumathipala,[1,2,3] Lisa Yelland,[4,5] Debra Green,[2] Tom Shepherd,[1] Kaushalya Jayaweera,[3] Paulo Ferreira,[6] and Jeffrey M. Craig[7]

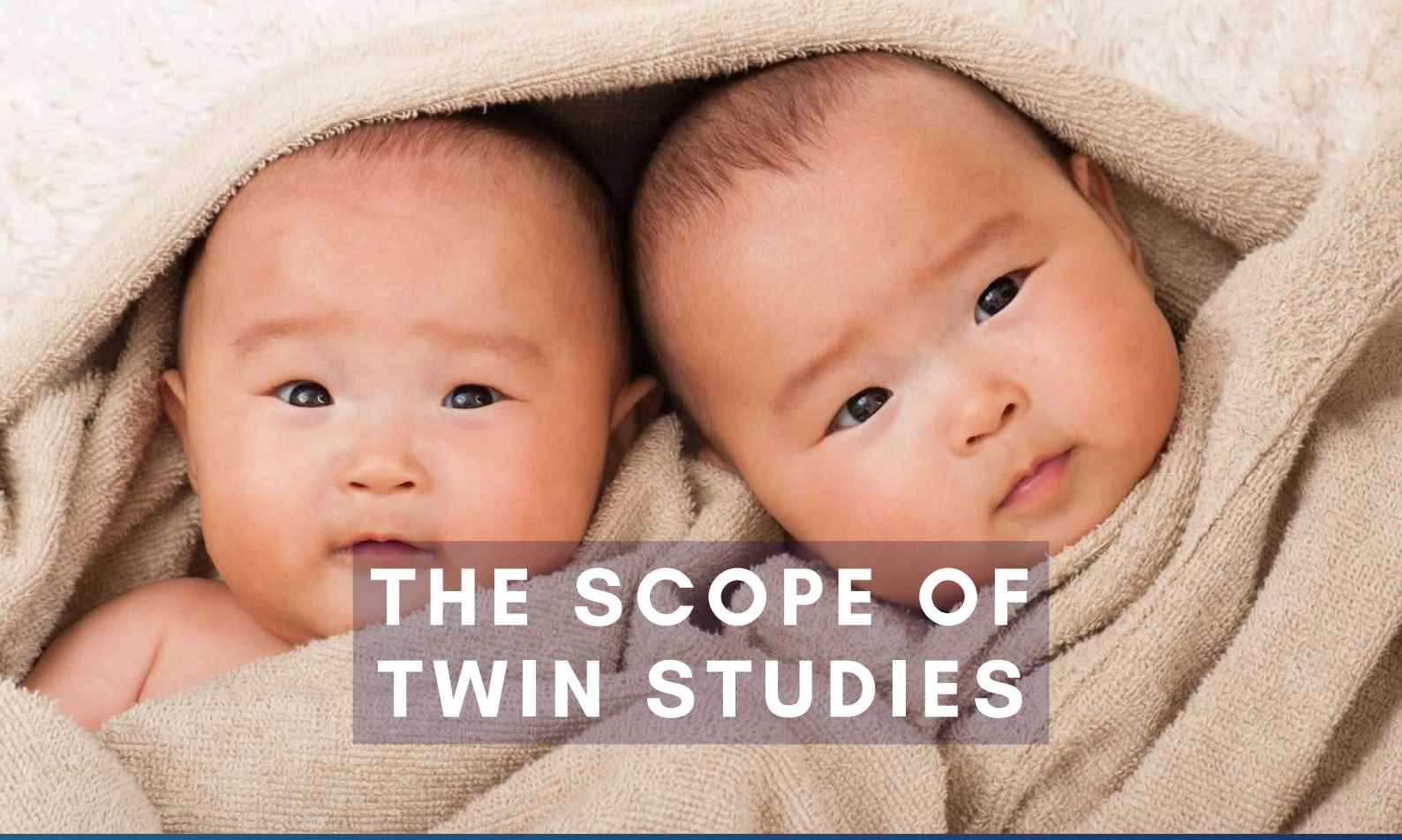


Book chapter ○ Abstract only

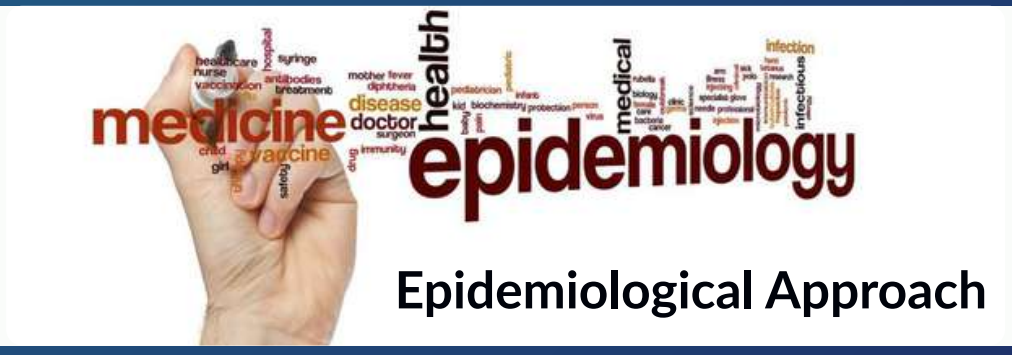
Chapter 15 - Twins in clinical trials

Athula Sumathipala and Kaushalya Jayaweera

Pages 253-258



THE SCOPE OF TWIN STUDIES



Epidemiological Approach

beyond the basics WHY?

Because

Because these are disorders that result from the contributions of multiple genomic variants and physical and social environments.

It is an era of complex diseases

- Common examples of complex diseases include heart disease, diabetes, and cancer.
- Complex multi-morbidity - three or more chronic illnesses across > 2 body systems.

IT IS FUTILE TO SEARCH FOR SINGLE GENES IN COMPLEX DISEASES

[Most single gene defects that cause disease has already been found].

Diseases of public health importance are due to complex interplay of multiple genetic and environmental exposures.

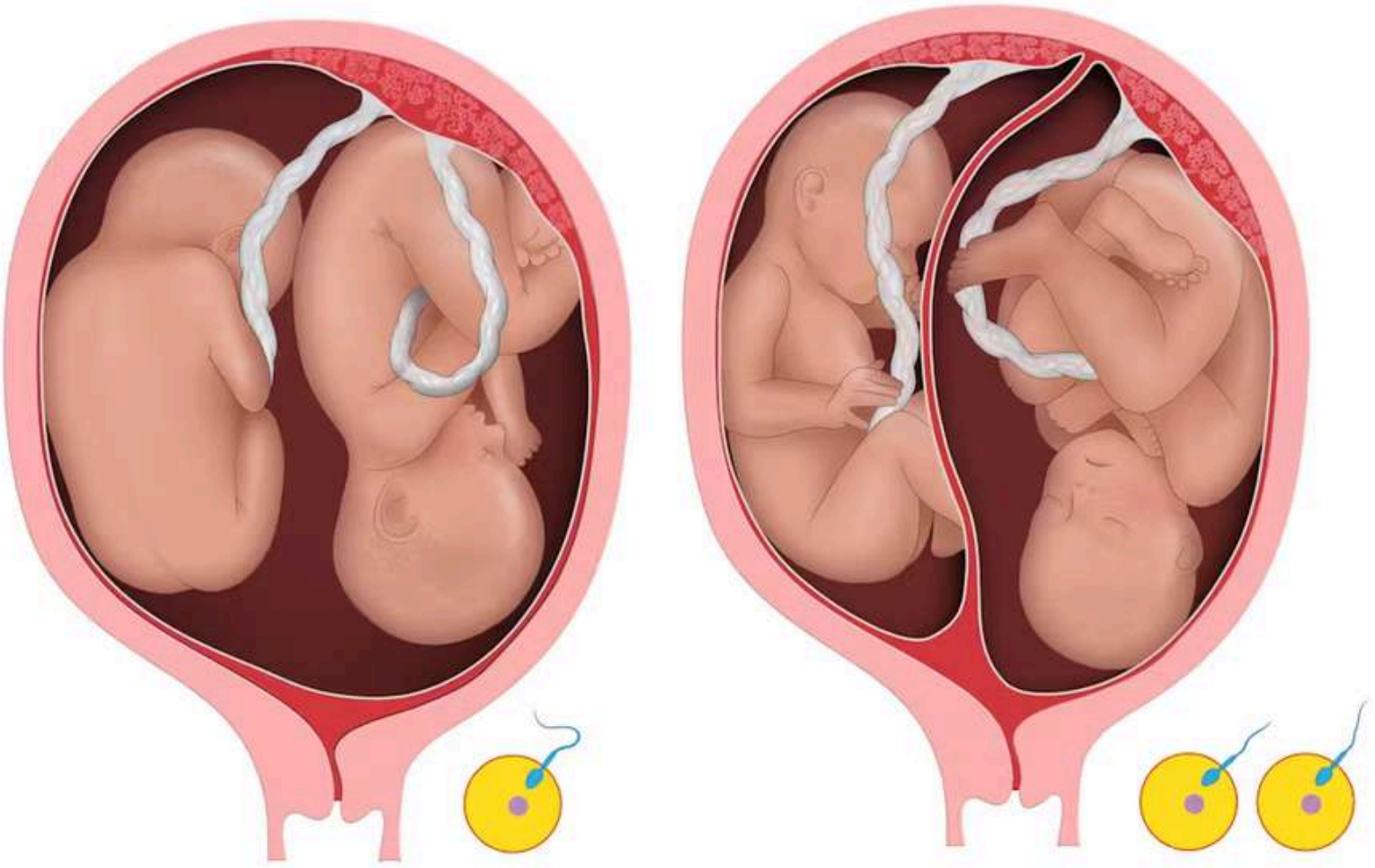
Discovering gene-environment interactions for the promotion of public health

Disentangling nature from nurture

How do we disentangle the contribution of nature (genetics) and nurture (upbringing or life experience)?

TWINS: NATURE'S LIVING LABORATORY

130 years ago, Darwin's cousin Francis Galton (the pioneer of twin research) recognized that twins provide a 'naturally occurring experimental design', a 'living laboratory' in which to study the effects of nature and nurture.



Therefore,
it's EVERYBODY'S business

A unique window into human potential, offering insights that span medicine, psychology, genetics, and beyond.

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With a global network of leading researchers and professionals, the International Society for Twin Studies (ISTS) champions excellence in twin research. This esteemed leadership team (2023-2025) reflects the society's commitment to advancing science through collaboration, innovation, and the highest international standards.

HIGHEST NATIONAL RECOGNITION

National Science Foundation awards 2018

The Institute for Research and Development was awarded **'Excellence in international collaboration for the advancement of science and technology'** by the National Science Foundation in Sri Lanka 2018.

'Individual outstanding leadership in promoting and developing science and technology'. From the National Science Foundation of Sri Lanka 2018.