Professor Conny van Ravenswaaij-Arts

My main research interests are CHARGE syndrome, rare chromosomal disorders and the use of new genome-wide techniques to identify genetic causes for intellectual disability.

Content and impact of major scientific and scholarly contributions

I graduated with an MD degree from the University of Leiden in 1986 and a PhD in Medical Sciences on the *Physiology of heart rate variability in newborns* from the Radboud University Nijmegen, in 1993. Following a post-MD specialisation in Clinical Cytogenetics and Clinical Genetics at the department of Human Genetics, Radboud University Nijmegen, I became a clinical genetics consultant and clinical cytogeneticist in 1997 at the same department. In September 2006 I changed affiliation to the department of Genetics of the University of Groningen, where I became an associate professor in clinical genetics in 2008. I obtained a certificate on Good Clinical Practice and was made a Professor of Dysmorphology, at the University of Groningen in 2011.

My main interest has always been children with congenital anomalies and I initiated together with prof .Albert Schinzel the European 5th Framewok project on rare chromosome disorders (www.ECARUCA.net) and wrote two work packages for the anEUploidy 6th Framework Project. I am interested in new molecular techniques to find small chromosome aberrations and with the introduction of the array technique new research possibilities became available. I started phenotype-genotype studies in chromosome disorders (over 25 papers), introduced this technique in routine diagnostics (over 10 papers) and discovered the *CHD7* gene involved in CHARGE syndrome. I initiated several studies around this syndrome, which resulted in an international web-based database (www.CHD7.org), over 20 papers and 2 book chapters.

My main focus remains the identification of genetic causes for congenital anomalies using high resolution molecular techniques, implementing these techniques in routine diagnostics and translate the results back to patients and there families. For the latter I coordinate multidisciplinary expert clinics on CHARGE syndrome, rare chromosome disorders and disorders of sexual development. Currently, I have recently initiated a multi-disciplinary research group that focuses on early genetic diagnosis, high quality phenotyping and intervention in children with abnormal neurological development. Ongoing research projects are: clinical and genetic studies related to CHARGE syndrome; exome-sequencing as diagnostic tool in microcephaly; phenotype-genotype studies in chromosome 18 deletions and chromosome 6 aberrations; and the use of intranasal insulin in Phelan-McDermid syndrome. For these studies I have set-up national and international collaborations.

International recognition and diffusion

In 1990, I received the dr. I.B.M. Frye Stipend for young investigator (Nijmegen), in 1992 the young investigator award of the Dutch Society of Paediatrics and in 2007 the Special Recognition Award of the International CHARGE Foundation.

Thus far I have co-authored over 100 papers, with a mean citation score above 40, and an H-index of 30. I have been invited speaker on many conferences including the conferences of the European Society of Human Genetics (ESHG), of the European Cytogeneticists Association, of the International CHARGE Foundation and of the American Society of Human Genetics.

I am involved in several national medical guidelines: i.e. for genetic diagnostics in sexual developmental disorders, primary amenorrhoea and whole-genome diagnostics. I also participate in an international task force on the implementation of genome-wide arrays in prenatal diagnosis. I am a member of the ESHG Genetic Services Quality Committee and currently coordinating the establishment of an international external quality assessment for genetic counselling.

Ability to inspire younger researchers

I have been directly involved in the training of 8 PhD students, have given national and international educational post-graduate lectures and courses, and I am a member of the Faculty of the European Course on Clinical Cytogenetics since its start in 2006. I have been invited to provide educational sessions, amongst others, at he ESHG, and as a guest lecturer in the US, Italy, Portugal and South-Africa. In 2011, I participated in the organizing committee of an international symposium on array diagnostics.

Strategic leadership qualities

I have served on many national and international bodies, including editorial boards of Journals, medical advisory boards of several patient organisations; and the board of the Dutch Society for Clinical Genetics (VKGN). Currently, I participate in: the scientific board of Orphanet; the board of the Catharina van Tussenbroek Fund; and the Genetic Services Quality Committee of the ESHG. I have been associate editor of the European Journal of Medical Genetics; chair of the project management board of the European Cytogeneticists Association Register of Unbalanced Chromosome Aberrations (ECARUCA); and chair of the Permanent Working Group “Clinical and Molecular Approach of Cytogenetic Syndromes” of the European Cytogeneticists Association.

Currently, my research group consists of 2 post-docs and 5 PhD students.

Publications on CHARGE syndrome

1. Corsten-Janssen N, Kerstjens-Frederikse WS, Marchie Sarvaas GJ du, Heimdal KR, Rustad CF, Hennekam RCM, Hofstra RMW, Hoefsloot LH, Baardman ME, Bakker MK, Bergman JEH, Hove HD, Ravenswaaij-Arts CMA van, Kapusta L. The cardiac phenotype in patients with a CHD7 mutation. Circ Cardiovasc Gene, 2013;6(3):248-254
2. N Corsten-Janssen, SC Saitta, LH Hoefsloot, DM McDonald-McGinn, DA Driscoll, R Derks, KA Dickinson, WS Kerstjens-Frederikse, BS Emanuel, EH Zackai, CMA van Ravenswaaij-Arts. More clinical overlap between 22q11.2 deletion syndrome and CHARGE syndrome than often anticipated. Mol Syndromol, 2013 : **4(5), 2013**
3. Hoefsloot LH, Corsten-Janssen N, van Ravenswaaij-Arts CMA. Molecular studies of the CHD7 gene: an obligatory diagnostic step in an expanding range of clinical phenotypes. Expert Rev Mol Diagn. 2012 Nov;12(8):795-7
4. Bergman JE, Janssen N, van der Sloot AM, de Walle HE, Schoots J, Rendtorff ND, Tranebjaerg L, Hoefsloot LH, van Ravenswaaij-Arts CM, Hofstra RM. A novel classification system to predict the pathogenic effects of CHD7 missense variants in CHARGE syndrome. Hum Mutat. 2012;33(8):1251-60
5. Janssen N, Bergman JE, Swertz MA, Tranebjaerg L, Lodahl M, Schoots J, Hofstra RM, van Ravenswaaij-Arts CM, Hoefsloot LH. Mutation update on the CHD7 gene involved in CHARGE syndrome. Hum Mutat. 2012;33(8):1149-1160
6. van Ravenswaaij-Arts, Conny M A; and Hoefsloot, Lies H (November 2012) Molecular Genetics of CHARGE Syndrome. In: eLS 2012, John Wiley & Sons Ltd: Chichester http://www.els.net/ [DOI: 10.1002/9780470015902.a0024289]
7. Bergman JEH, de Ronde W, Jongmans MCJ, Wolffenbuttel BHR, Drop SLS, Hermus A, Bocca G, Hoefsloot LH, van Ravenswaaij-Arts CMA. The results of CHD7 analysis in clinically well-characterized patients with Kallmann syndrome. J Clin Endocrinol Metab. 2012;97:E858-E862
8. Bergman JEH, Bocca G, Hoefsloot LH, Meiners LC, van Ravenswaaij-Arts CMA. Anosmia predicts hypogonadotropic hypogonadism in CHARGE syndrome. J Pediatr 2011;158(3):474-9
9. Bergman JEH, Janssen N, Jongmans M, Hoefsloot LH, van Ravenswaaij-Arts CMA. *CHD7* mutations and CHARGE syndrome: the clinical implications of an expanding phenotype. J Med Genet 2011; 48(5):334-342
10. Blake K, van Ravenswaaij-Arts CMA, Hoefsloot L, Verloes A. Clinical utility gene card for: CHARGE syndrome. Eur J Hum Genet 2011;19(9):1016 / 2011:e1-e3
11. Hartshorne TS, Stratton KK, van Ravenswaaij-Arts CMA. Prevalence of genetic testing in CHARGE syndrome. J of Genet Counsel 2011;20:49-57
12. Bergman JEH, Blake KD, Bakker MK, Free RH, van Ravenswaaij-Arts CMA. Death in CHARGE syndrome after the neonatal period: a report of seven patients and review of the literature. Clin Genet 2010;77(3):232-240
13. Bergman JEH, Bosman EA, van Ravenswaaij-Arts CMA, Steel KP. Study of smell and reproductive organs in a mouse model for CHARGE syndrome. Eur J Hum Genet 2010;18(2):171-177
14. Wulffaert J, Scholte EM, Dijkxhoorn YM, Bergman JEH, van Ravenswaaij-Arts CMA, van Berckelaer-Onnes IA. Parenting stress in CHARGE syndrome and the relationship with child characteristcs. J Dev Phys Disabil. 2009;21(4):301-313
15. Jongmans MCJ, van Ravenswaaij-Arts CMA, Pitteloud N, Ogata T, Sato N, Claahsenvan der Grinten HL, van der Donk K, Seminara S, Bergman JEH, Brunner HG, Crowley Jr WF, Hoefsloot LH. *CHD7* mutations in patients initially diagnosed with Kallmann Syndrome - the clinical overlap with CHARGE syndrome. Clin Genet 2009;75(1):65-71
16. Bergman JEH, de Wijs I, Jongmans MCJ, Admiraal RJ, Hoefsloot LH, van Ravenswaaij-Arts CMA. Exon copy number alterations of the *CHD7* gene are not a major cause of CHARGE and CHARGE-like syndrome. Eur J Med Genet 2008;51(45):417-425
17. Jongmans MCJ, Hoefsloot LH, van der Donk KP, Admiraal RJ, Magee A, van de Laar I, Hendriks Y, Verheij JBGM, Walpole I, Brunner HG, van Ravenswaaij CMA. Familial CHARGE syndrome and the *CHD7* gene: A recurrent missense mutation, intrafamilial recurrence and variability. Am J Med Genet A 2008;146A(1):43-50
18. Veltman JA, van Ravenswaaij-Arts CMA (2008) CHD7 and CHARGE syndrome. In: *Inborn Errors of Development*, 2nd edn. Editors Epstein CJ, Erickson RP, Wynshaw-Boris AMD, Pages 995-1002, Oxford: Oxford University Press
19. Verhoeven WMA, van Ravenswaaij-Arts CMA, de Leeuw N, Fekkes D, van der Heijden FMMA, Egger JIM, Tuinier S. Disturbed serine metabolism and psychosis in a patient with a de novo translocation (2;10)(p23;q22.1). Genet Couns 2006;17(4):421-428

20. Vervloed MPJ, Hoevenaars-van den Boom MAA, Knoors H, van Ravenswaaij CMA, Admiraal RJC. CHARGE syndrome: Relations between behavioral characteristics and medical conditions. Am J Med Genet A 2006;140A(8):851-862
21. Jongmans MCJ, Admiraal RJ, van der Donk KP, Vissers LELM, Baas AF, Kapusta L, van Hagen JM, Donnai D, de Ravel TJ, Veltman JA, Geurts van Kessel A, de Vries BBA, Brunner HG, Hoefsloot LH, van Ravenswaaij-Arts CMA. CHARGE syndrome: the phenotypic spectrum of mutations in the CHD7 gene. J Med Genet 2006;43(4):306-14
22. Vissers LELM, van Ravenswaaij-Arts CMA, Admiraal R, Hurst JA, de Vries BBA, Janssen IM, van der Vliet WA, Huys EHLPG, de Jong PJ, Hamel BCJ, Schoenmakers EFPM, Brunner HG, Veltman JA, Geurts van Kessel A. Mutations in a new member of the chromodomain gene family cause CHARGE syndrome. Nat Genet 2004;36(9):955-7

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