Helminth infections, allergic disorders and immune responses: studies in Indonesia

Wahyuni, Sitti

References

1. Masbar,S., Palmieri,J.R., Marwoto,H.A., Purnomo, and Darwis,F., Blood parasites of wild and domestic animals from South Kalimantan (Borneo), Indonesia. *Southeast Asian J.Trop.Med.Public Health* 1981. 12: 42-46.
2. Suzuki,T., Sudomo,M., Bang,Y.H., and Lim,B.L., Studies on Malayan filariasis in Bengkulu (Sumatera), Indonesia with special reference to vector confirmation. *Southeast Asian J.Trop.Med.Public Health* 1981. 12: 47-54.
3. WHO, Control of lymphatic filariasis. A manual for health personnel. World Health Organization, Geneva 1987.
4. Spencer,H., Nematode diseases; filarial diseases. *Tropical Pathology*. Springer-Verlag, Berlin 1973, pp 511-559.
5. WHO, *Lymphatic filariasis: the disease and its control*. World Health Organization, Geneva 1992.
6. Das,B.K., Sahoo,P.K., and Ravindran,B., A role for tumour necrosis factor-alpha in acute lymphatic filariasis. *Parasite Immunol.* 1996. 18: 421-424.
7. Esterre,P., Plichart,C., Huin-Blondey,M.O., and Nguyen,L.N., Soluble cellular adhesion molecules, selectins, VEGF and endothelin-1 in patients with Wuchereria bancrofti infection and association with clinical status. *Parasite Immunol.* 2005. 27: 9-16.
8. Neva,F.A., Kaplan,A.P., Pacheco,G., Gray,L., and Danaraj,T.J., Tropical eosinophilia. A human model of parasitic immunopathology, with observations on serum IgE levels before and after treatment. *J.Allergy Clin.Immunol.* 1975. 55: 422-429.
9. Hussain,R., Poindexter,R.W., and Ottesen,E.A., Control of allergic reactivity in human filariasis. Predominant localization of blocking antibody to the IgG4 subclass. *J.Immunol.* 1992. 148: 2731-2737.
10. Chan,M.S., The global burden of intestinal nematode infections—fifty years on. *Parasitol.Today* 1997. 13: 438-443.
11. Hotez,P.J., Narasimhan,S., Haggerty,J., Milstone,L., Bhopale,V., Schad,G.A., and Richards,F.F., Hyaluronidase from infective Ancylostoma hookworm larvae and its possible function as a virulence factor in tissue invasion and in cutaneous larva migrans. *Infect.Immun.* 1992. 60: 1018-1023.
12. Brown,H.W., *Basic clinical parasitology*. Meredith corporation, 1969.
13. Tripathy,K., Duque,E., Bolanos,O., Lotero,H., and Mayoral,L.G., Malabsorption syndrome in ascariasis. *Am.J.Clin.Nutr.* 1972. 25: 1276-1281.
14. Mariani,P., Magliocca,F.M., Cipolletta,E., Orefei,P., Pulvirenti,S., Businco,M.L., and Bonamico,M., [Ascaridiasis: a rare cause of recurrent abdominal pain. Report of a clinical case documented by ultrastructural study of the intestinal mucosa]. *Minerva Pediatr.* 1993. 45: 523-527.
15. Gahukamble,D.B. and Gahukamble,L., Granulomatous peritonitis due to Ascaris lumbricoides. *Ann.Trop.Paediatr.* 1987. 7: 142-144.
16. Khuroo,M.S., Hepatobiliary and pancreatic ascariasis. *Indian J.Gastroenterol.* 2001. 20 Suppl 1:C28-32.: C28-C32.
17. Taylor,K.L., Ascariasis of the kidney. *Pediatr.Pathol.Lab Med.* 1995. 15: 609-615.
18. Kaur,G., Raj,S.M., and Naing,N.N., Trichuriasis: localized inflammatory responses in the colon. *Southeast Asian J.Trop.Med.Public Health* 2002. 33: 224-228.
19. Gilman,R.H., Davis,C., and Fitzgerald,F., Heavy Trichuris infection and amoebic dysentery in Orang Asli children. A comparison of the two diseases. *Trans.R.Soc.Trop.Med.Hyg.* 1976. 70: 313-316.
20. Crosby,W.H., The deadly hookworm. Why did the Puerto Ricans die? *Arch.Intern.Med.* 1987. 147: 577-578.
21. Hotez,P.J. and Pritchard,D.I., Hookworm infection. *Sci.Am.* 1995. 272: 68-74.
22. Haga,J. and Eecke,V., Elephantiasis scroti et penis. Operatie II mikroskopisch onderzoek. *Geneeskundig Tijdschrift voor Nederlands Indie* 1889. 29: 102-113.
23. Bancroft,J., Discovery of the adult representative of microscopic filariae. *Lancet* 1877. 2: 70-71.
24. Brug,S.L., Filariasis in Nederlands-Indie. *Geneeskundig Tijdschrift voor Nederlands Indie* 1928. 68: 681-704.
25. Partono,F., Dennis,D.T., Atmosoedjono,S., Oemijati,S., and Cross,J.H., Brugia timori sp. n. (nematoda: filarioidea) from Flores Island, Indonesia. *J.Parasitol.* 1977. 63: 540-546.
26. Self,L.S., Usman,S., Sajioiman,H., Partono,F., Nelson,M.J., Pant,C.P., Suzuki,T., and Mechfudin,H., A multidisciplinary study on bancroftian filariasis in Jakarta. *Trans.R.Soc.Trop.Med.Hyg.* 1978. 72: 581-587.
27. Oemijati,S., Current status of filariasis in Indonesia. *Southeast Asian J.Trop.Med.Public Health* 1993. 24 Suppl 2:2-4.: 2-4.
28. Atomosoedjono,S., Van Peenen,P.F., and Putrali,J., Anopheles barbirostris (Van der Wulp) still an efficient vector of Brugia malayi in Central Sulawesi (Celebes), Indonesia. *Trans.R.Soc.Trop.Med.Hyg.* 1976. 70: 259.
29. Partono,F., Oemijati,S., Hudojo, Joesoef,A., Clarke,M.D., Durfee,P.T., Irving,G.S., Taylor,J., and Cross,J.H., Brugia malayi in seven villages in South Kalimantan, Indonesia. *Southeast Asian J.Trop.Med.Public Health* 1977. 8: 400-407.
30. Joesoef,A. and Cross,J.H., Human filariae in Indonesia. *Southeast Asian J.Trop.Med.Public Health* 1978. 9: 15-19.
31. Partono,F., Pribadi,P.W., and Soewarta,A., Epidemiological and clinical features of Brugia timori in a newly established village. Karakuak, West Flores, Indonesia. *Am.J.Trop.Med.Hyg.* 1978. 27: 910-915.

32. Joesoef,A. and Cross,J.H., Distribution and prevalence of cases of microfilaraemia in Indonesia. *Southeast Asian J.Trop.Med.Public Health* 1978. 9: 480-488.
33. Directorate General Communicable Diseases Control and Environmental Health of Indonesia. 1998. Ref Type: Report
34. WHO informal consultative meeting on South East Asia Region in India. 2002. Ref Type: Report
35. Directorate General Communicable Diseases Control and Environmental Health of Indonesia. The prevalence of lymphatic filariasis in 2000-2006 in Indonesia. 2006. Ref Type: Report
36. Partono,F., Hudojo, Oemijati,S., Noor,N., Borahima, Cross,J.H., Clarke,M.D., Irving,G.S., and Duncan,C.F., Malayan Filariasis in Margolembo, South Sulawesi,Indonesia. *Southeast Asian J Trop Med Public Health* 1972. 3: 537-547.
37. Partono,F., Cross,J.H., Borahima, Lien,J.C., and Oemijati,S., Malaria and filariasis in a transmigration village eight and twenty-two months after establishment. *Southeast Asian J Trop Med Public Health* 1973. 4: 484-486.
38. Partono,F. and Purnomo, Clinical features of timorian filariasis among immigrants to an endemic area in West Flores, Indonesia. *Southeast Asian J.Trop.Med.Public Health* 1978. 9: 338-343.
39. Sudomo,M., Liat,L.B., Sustriayu,N., and Bang,Y.H., A survey of filariasis at Waru village and Babulu Darat Transmigration Scheme, East Kalimantan. *Southeast Asian J.Trop.Med.Public Health* 1980. 11: 451-460.
40. Partono,F., Oemijati,S., Hudojo, Joesoef,A., Sajidiman,H., Putrali,J., Clarke,M.D., Carney,W.P., and Cross,J.H., Malayan filariasis in Central Sulawesi (Celebes), Indonesia. *Southeast Asian J.Trop.Med.Public Health* 1977. 8: 452-458.
41. Harbut,C.L., Filariasis in West Irian, Indonesia: a survey of six villages. *Am.J.Trop.Med.Hyg.* 1983. 32: 764-766.
42. Haarbrink,M., Terhell,A.J., Abadi,K., Asri,M., de Medeiros,F., and Yazdanbakhsh,M., Anti-filarial IgG4 in men and women living in Brugia malayi-endemic areas. *Trop.Med.Int.Health* 1999. 4: 93-97.
43. Supali,T., Wibowo,H., Ruckert,P., Fischer,K., Ismid,I.S., Purnomo, Djuardi,Y., and Fischer,P., High prevalence of Brugia timori infection in the highland of Alor Island, Indonesia. *Am.J.Trop.Med.Hyg.* 2002. 66: 560-565.
44. Partono,F., Djakaria, Oemijati,S., Joesoef,A., Clarke,M.D., Cole,W.C., Lien,J.C., and Cross,J.H., Filariasis in West Kalimantan(Borneo), Indonesia. *Southeast Asian J Trop Med Public Health* 1977. 8: 459-407.
45. Directorate General Communicable Diseases Control and Environmental Health of Indonesia. 2001. Ref Type: Report
46. Oqueka,T., Supali,T., Ismid,I.I., Purnomo,M., Ruckert,P., Bradley,M.H., and Fischer,P., Impact of two rounds of mass drug administration using diethylcarbamazine combined with albendazole on the prevalence of Brugia timori and of intestinal helminths on Alor Island, Indonesia. *Filaria.J.* 2005. 4: 5.
47. Uga,S., Ono,K., Kataoka,N., Safriah,A., Tantular,I.S., Dachlan,Y.P., and Ranuh,I.G., Contamination of soil with parasite eggs in Surabaya, Indonesia. *Southeast Asian J.Trop.Med.Public Health* 1995. 26: 730-734.
48. Widjana,D.P. and Sutisna,P., Prevalence of soil-transmitted helminth infections in the rural population of Bali, Indonesia. *Southeast Asian J.Trop.Med.Public Health* 2000. 31: 454-459.
49. Wahyuni, S. The prevalence of intestinal helminth in 2003 in Enrekang, South Sulawesi, Indonesia. unpublished. Ref Type: Generic
50. Bakta,I.M., Widjana,I.D., and Sutisna,P., Some epidemiological aspects of hookworm infection among the rural population of Bali, Indonesia. *Southeast Asian J.Trop.Med.Public Health* 1993. 24: 87-93.
51. Bangs,M.J., Purnomo, Andersen,E.M., and Anthony,R.L., Intestinal parasites of humans in a highland community of Irian Jaya, Indonesia. *Ann.Trop.Med.Parasitol.* 1996. 90: 49-53.
52. Higgins,D.A., Jenkins,D.J., Kurniawan,L., Purnomo, Harun,S., and Juwono,S.S., Human intestinal parasitism in three areas of Indonesia: a survey. *Ann.Trop.Med.Parasitol.* 1984. 78: 637-648.
53. Cross,J.H., Clarke,M.D., Durfee,P.T., Irving,G.S., Taylor,J., Partono,F., Joesoef,A., Hudojo, and Oemijati,S., Parasitology survey and seroepidemiology of amoebiasis in South Kalimantan (Borneo), Indonesia. *Southeast Asian J.Trop.Med.Public Health* 1975. 6: 52-60.
54. Cross,J.H., Clarke,M.D., Carney,W.P., Putrali,J., Joesoef,A., Sajidiman,H., Partono,F., Hudojo, and Oemijati,S., Parasitology survey in the Palu Valley, central Sulawesi (Celebes), Indonesia. *Southeast Asian J.Trop.Med.Public Health* 1975. 6: 366-375.
55. Hasegawa,H., Miyagi,I., Toma,T., Kamimura,K., Nainggolan,I.J., Tumewu-Wagei,M., Mandagi-Waworuntu,H.G., Kapojos,F.X., Runtuwene,J., Paath-Runtupalit,C., and ., Intestinal parasitic infections in Likupang, North Sulawesi, Indonesia. *Southeast Asian J.Trop.Med.Public Health* 1992. 23: 219-227.
56. Mangali,A., Sasabone,P., Syafruddin, Abadi,K., Hasegawa,H., Toma,T., Kamimura,K., Hasan,M., Miyagi,I., and Mogi,M., Prevalence of intestinal helminthic infections in Kao District, north Halmahera, Indonesia. *Southeast Asian J.Trop.Med.Public Health* 1994. 25: 737-744.
57. Tanumihardjo,S.A., Permaesih,D., and Muhilal, Vitamin A status and hemoglobin concentrations are improved in Indonesian children with vitamin A and deworming interventions. *Eur.J.Clin.Nutr.* 2004. 58: 1223-1230.

58. Maizels,R.M., Bundy,D.A., Selkirk,M.E., Smith,D.F., and Anderson,R.M., Immunological modulation and evasion by helminth parasites in human populations. *Nature* 1993. 365: 797-805.
59. Ottesen,E.A., Filariasis now. *Am.J.Trop.Med.Hyg.* 1989. 41: 9-17.
60. Day,K.P., The endemic normal in lymphatic filariasis: A static concept. *Parasitol.Today* 1991. 7: 341-343.
61. Grove,D.I., Cabrera,B.D., Valeza,F.S., Guinto,R.S., Ash,L.R., and Warren,K.S., Sensitivity and specificity of skin reactivity to Brugia malayi and Dirofilaria immitis antigens in Bancroftian and Malayan filariasis in the Philippines. *Am.J.Trop.Med.Hyg.* 1977. 26: 220-229.
62. Day,K.P., Gregory,W.F., and Maizels,R.M., Age-specific acquisition of immunity to infective larvae in a bancroftian filariasis endemic area of Papua New Guinea. *Parasite Immunol.* 1991. 13: 277-290.
63. Stolk,W.A., Ramaiah,K.D., Van Oortmarssen,G.J., Das,P.K., Habbema,J.D., and De Vlas,S.J., Meta-analysis of age-prevalence patterns in lymphatic filariasis: no decline in microfilaraemia prevalence in older age groups as predicted by models with acquired immunity. *Parasitology* 2004. 129: 605-612.
64. Dalai,S.K., Das,D., and Kar,S.K., Setaria digitata adult 14- to 20-kDa antigens induce differential Th1/Th2 cytokine responses in the lymphocytes of endemic normals and asymptomatic microfilariae carriers in bancroftian filariasis. *J.Clin.Immunol.* 1998. 18: 114-123.
65. Steel,C., Guinea,A., and Ottesen,E.A., Evidence for protective immunity to bancroftian filariasis in the Cook Islands. *J.Infect.Dis.* 1996. 174: 598-605.
66. Maizels,R.M. and Yazdanbakhsh,M., Immune regulation by helminth parasites: cellular and molecular mechanisms. *Nat.Rev.Immunol.* 2003. 3: 733-744.
67. Mahanty,S., Mollis,S.N., Ravichandran,M., Abrams,J.S., Kumaraswami,V., Jayaraman,K., Ottesen,E.A., and Nutman,T.B., High levels of spontaneous and parasite antigen-driven interleukin-10 production are associated with antigen-specific hyporesponsiveness in human lymphatic filariasis. *J.Infect.Dis.* 1996. 173: 769-773.
68. Sartono,E., Kruize,Y.C., Partono,F., Kurniawan,A., Maizels,R.M., and Yazdanbakhsh,M., Specific T cell unresponsiveness in human filariasis: diversity in underlying mechanisms. *Parasite Immunol.* 1995. 17: 587-594.
69. Nutman,T.B., Kumaraswami,V., and Ottesen,E.A., Parasite-specific anergy in human filariasis. Insights after analysis of parasite antigen-driven lymphokine production. *J.Clin.Invest* 1987. 79: 1516-1523.
70. King,C.L., Mahanty,S., Kumaraswami,V., Abrams,J.S., Regunathan,J., Jayaraman,K., Ottesen,E.A., and Nutman,T.B., Cytokine control of parasite-specific anergy in human lymphatic filariasis. Preferential induction of a regulatory T helper type 2 lymphocyte subset. *J.Clin.Invest* 1993. 92: 1667-1673.
71. Platts-Mills,T.A., Woodfolk,J.A., Erwin,E.A., and Aalberse,R., Mechanisms of tolerance to inhalant allergens: the relevance of a modified Th2 response to allergens from domestic animals. *Springer Semin.Immunopathol.* 2004. 25: 271-279.
72. Maizels,R.M., Sartono,E., Kurniawan,A., Partono,F., Selkirk,M.E., and Yazdanbakhsh,M., T-cell activation and the balance of antibody isotypes in human lymphatic filariasis. *Parasitol.Today* 1995. 11: 50-56.
73. Kurniawan,A., Yazdanbakhsh,M., Van Ree,R., Aalberse,R., Selkirk,M.E., Partono,F., and Maizels,R.M., Differential expression of IgE and IgG4 specific antibody responses in asymptomatic and chronic human filariasis. *J.Immunol.* 1993. 150: 3941-3950.
74. Nielsen,N.O., Bloch,P., and Simonsen,P.E., Lymphatic filariasis-specific immune responses in relation to lymphoedema grade and infection status. II. Humoral responses. *Trans.R.Soc.Trop.Med.Hyg.* 2002. 96: 453-458.
75. Elson,L.H., Calvopina,M., Paredes,W., Araujo,E., Bradley,J.E., Guderian,R.H., and Nutman,T.B., Immunity to onchocerciasis: putative immune persons produce a Th1-like response to Onchocerca volvulus. *J.Infect.Dis.* 1995. 171: 652-658.
76. Luder,C.G., Schulz-Key,H., Banla,M., Pritze,S., and Soboslay,P.T., Immunoregulation in onchocerciasis: predominance of Th1-type responsiveness to low molecular weight antigens of Onchocerca volvulus in exposed individuals without microfilaridermia and clinical disease. *Clin.Exp.Immunol.* 1996. 105: 245-253.
77. Osborne,J. and Devaney,E., The L3 of Brugia induces a Th2-polarized response following activation of an IL-4-producing CD4-CD8- alphabeta T cell population. *Int.Immunol.* 1998. 10: 1583-1590.
78. Lawrence,R.A., Allen,J.E., Gregory,W.F., Kopf,M., and Maizels,R.M., Infection of IL-4-deficient mice with the parasitic nematode Brugia malayi demonstrates that host resistance is not dependent on a T helper 2-dominated immune response. *J.Immunol.* 1995. 154: 5995-6001.
79. Lawrence,R.A., Allen,J.E., Osborne,J., and Maizels,R.M., Adult and microfilarial stages of the filarial parasite Brugia malayi stimulate contrasting cytokine and Ig isotype responses in BALB/c mice. *J.Immunol.* 1994. 153: 1216-1224.
80. Pearlman,E., Hazlett,F.E., Jr., Boom,W.H., and Kazura,J.W., Induction of murine T-helper-cell responses to the filarial nematode Brugia malayi. *Infect.Immun.* 1993. 61: 1105-1112.
81. Osborne,J. and Devaney,E., Anti-interleukin-4 modulation of the Th2 polarized response to the parasitic nematode Brugia pahangi. *Infect.Immun.* 1996. 64: 3461-3466.

82. Lawrence,R.A., Allen,J.E., and Gray,C.A., Requirements for in vivo IFN-gamma induction by live microfilariae of the parasitic nematode, Brugia malayi. *Parasitology.* 2000. 120: 631-640.
83. Allen,J.E., Lawrence,R.A., and Maizels,R.M., APC from mice harbouring the filarial nematode, Brugia malayi, prevent cellular proliferation but not cytokine production. *Int.Immunol.* 1996. 8: 143-151.
84. MacDonald,A.S., Maizels,R.M., Lawrence,R.A., Dransfield,I., and Allen,J.E., Requirement for in vivo production of IL-4, but not IL-10, in the induction of proliferative suppression by filarial parasites. *J.Immunol.* 1998. 160: 1304-1312.
85. Al Qaoud,K.M., Pearlman,E., Hartung,T., Klukowski,J., Fleischer,B., and Hoerauf,A., A new mechanism for IL-5-dependent helminth control: neutrophil accumulation and neutrophil-mediated worm encapsulation in murine filariasis are abolished in the absence of IL-5. *Int.Immunol.* 2000. 12: 899-908.
86. Saeftel,M., Arndt,M., Specht,S., Volkmann,L., and Hoerauf,A., Synergism of gamma interferon and interleukin-5 in the control of murine filariasis. *Infect.Immun.* 2003. 71: 6978-6985.
87. Bundy,D.A. and Cooper,E.S., Trichuris and trichuriasis in humans. *Adv.Parasitol.* 1989. 28:107-73.: 107-173.
88. Elkins,D.B., Haswell-Elkins,M., and Anderson,R.M., The importance of host age and sex to patterns of reinfection with Ascaris lumbricoides following mass anthelmintic treatment in a South Indian fishing community. *Parasitology* 1988. 96: 171-184.
89. Bundy,D.A. and Medley,G.F., Immuno-epidemiology of human geohelminthiasis: ecological and immunological determinants of worm burden. *Parasitology* 1992. 104 Suppl:S105-19.: S105-S119.
90. Cooper,P.J., Chico,M.E., Sandoval,C., Espinel,I., Guevara,A., Kennedy,M.W., Urban Jr,J.F., Griffin,G.E., and Nutman,T.B., Human infection with Ascaris lumbricoides is associated with a polarized cytokine response. *J.Infect.Dis.* 2000. 182: 1207-1213.
91. Turner,J.D., Faulkner,H., Kamgno,J., Cormont,F., Van Snick,J., Else,K.J., Grencis,R.K., Behnke,J.M., Boussinesq,M., and Bradley,J.E., Th2 cytokines are associated with reduced worm burdens in a human intestinal helminth infection. *J.Infect.Dis.* 2003. 188: 1768-1775.
92. Faulkner,H., Turner,J., Kamgno,J., Pion,S.D., Boussinesq,M., and Bradley,J.E., Age- and infection intensity-dependent cytokine and antibody production in human trichuriasis: the importance of IgE. *J.Infect.Dis.* 2002. 185: 665-672.
93. Jackson,J.A., Turner,J.D., Rentoul,L., Faulkner,H., Behnke,J.M., Hoyle,M., Grencis,R.K., Else,K.J., Kamgno,J., Boussinesq,M., and Bradley,J.E., T helper cell type 2 responsiveness predicts future susceptibility to gastrointestinal nematodes in humans. *J.Infect.Dis.* 2004. 190: 1804-1811.
94. Jackson,J.A., Turner,J.D., Rentoul,L., Faulkner,H., Behnke,J.M., Hoyle,M., Grencis,R.K., Else,K.J., Kamgno,J., Bradley,J.E., and Boussinesq,M., Cytokine response profiles predict species-specific infection patterns in human GI nematodes. *Int.J.Parasitol.* 2004. 34: 1237-1244.
95. Palmer,D.R., Hall,A., Haque,R., and Anwar,K.S., Antibody isotype responses to antigens of Ascaris lumbricoides in a case-control study of persistently heavily infected Bangladeshi children. *Parasitology* 1995. 111: 385-393.
96. Hagel,I., Lynch,N.R., Di Prisco,M.C., Rojas,E., Perez,M., and Alvarez,N., Ascaris reinfection of slum children: relation with the IgE response. *Clin.Exp.Immunol.* 1993. 94: 80-83.
97. McSharry,C., Xia,Y., Holland,C.V., and Kennedy,M.W., Natural immunity to Ascaris lumbricoides associated with immunoglobulin E antibody to ABA-1 allergen and inflammation indicators in children. *Infect.Immun.* 1999. 67: 484-489.
98. Urban,J.F., Jr., Katona,I.M., Paul,W.E., and Finkelman,F.D., Interleukin 4 is important in protective immunity to a gastrointestinal nematode infection in mice. *Proc.Natl.Acad.Sci.U.S.A.* 1991. 88: 5513-5517.
99. Harari,Y., Russell,D.A., and Castro,G.A., Anaphylaxis-mediated epithelial Cl- secretion and parasite rejection in rat intestine. *J.Immunol.* 1987. 138: 1250-1255.
100. Ahmad,A., Wang,C.H., and Bell,R.G., A role for IgE in intestinal immunity. Expression of rapid expulsion of Trichinella spiralis in rats transfused with IgE and thoracic duct lymphocytes. *J.Immunol.* 1991. 146: 3563-3570.
101. Dessein,A.J., Parker,W.L., James,S.L., and David,J.R., IgE antibody and resistance to infection. I. Selective suppression of the IgE antibody response in rats diminishes the resistance and the eosinophil response to Trichinella spiralis infection. *J.Exp.Med.* 1981. 153: 423-436.
102. Finkelman,F.D., Katona,I.M., Urban,J.F., Jr., Snapper,C.M., Ohara,J., and Paul,W.E., Suppression of in vivo polyclonal IgE responses by monoclonal antibody to the lymphokine B-cell stimulatory factor 1. *Proc.Natl.Acad.Sci.U.S.A.* 1986. 83: 9675-9678.
103. Yamaguchi,Y., Hayashi,Y., Sugama,Y., Miura,Y., Kasahara,T., Kitamura,S., Torisu,M., Mita,S., Tominaga,A., and Takatsu,K., Highly purified murine interleukin 5 (IL-5) stimulates eosinophil function and prolongs in vitro survival. IL-5 as an eosinophil chemotactic factor. *J.Exp.Med.* 1988. 167: 1737-1742.
104. Coffman,R.L., Seymour,B.W., Hudak,S., Jackson,J., and Rennick,D., Antibody to interleukin-5 inhibits helminth-induced eosinophilia in mice. *Science.* 1989. 245: 308-310.

105. David,J.R., Butterworth,A.E., and Vadas,M.A., Mechanism of the interaction mediating killing of Schistosoma mansoni by human eosinophils. *Am.J.Trop.Med.Hyg.* 1980. 29: 842-848.
106. Herndon,F.J. and Kayes,S.G., Depletion of eosinophils by anti-IL-5 monoclonal antibody treatment of mice infected with Trichinella spiralis does not alter parasite burden or immunologic resistance to reinfection. *J.Immunol.* 1992. 149: 3642-3647.
107. Faulkner,H., Renauld,J.C., Van Snick,J., and Grencis,R.K., Interleukin-9 enhances resistance to the intestinal nematode Trichuris muris. *Infect.Immun.* 1998. 66: 3832-3840.
108. Bancroft,A.J., McKenzie,A.N., and Grencis,R.K., A critical role for IL-13 in resistance to intestinal nematode infection. *J.Immunol.* 1998. 160: 3453-3461.
109. Artis,D., Humphreys,N.E., Bancroft,A.J., Rothwell,N.J., Potten,C.S., and Grencis,R.K., Tumor necrosis factor alpha is a critical component of interleukin 13-mediated protective T helper cell type 2 responses during helminth infection. *J.Exp.Med.* 1999. 190: 953-962.
110. Finkelman,F.D., Holmes,J., Katona,I.M., Urban,J.F., Jr., Beckmann,M.P., Park,L.S., Schooley,K.A., Coffman,R.L., Mosmann,T.R., and Paul,W.E., Lymphokine control of in vivo immunoglobulin isotype selection. *Annu.Rev.Immunol.* 1990. 8:303-33.: 303-333.
111. Else,K.J., Finkelman,F.D., Maliszewski,C.R., and Grencis,R.K., Cytokine-mediated regulation of chronic intestinal helminth infection. *J.Exp.Med.* 1994. 179: 347-351.
112. Else,K.J., Entwistle,G.M., and Grencis,R.K., Correlations between worm burden and markers of Th1 and Th2 cell subset induction in an inbred strain of mouse infected with Trichuris muris. *Parasite Immunol.* 1993. 15: 595-600.
113. Finkelman,F.D., Madden,K.B., Cheever,A.W., Katona,I.M., Morris,S.C., Gately,M.K., Hubbard,B.R., Gause,W.C., and Urban,J.F., Jr., Effects of interleukin 12 on immune responses and host protection in mice infected with intestinal nematode parasites. *J.Exp.Med.* 1994. 179: 1563-1572.
114. Ottesen,E.A., Weller,P.F., and Heck,L., Specific cellular immune unresponsiveness in human filariasis. *Immunology* 1977. 33: 413-421.
115. Sartono,E., Kruize,Y.C., Kurniawan,A., Maizels,R.M., and Yazdanbakhsh,M., Depression of antigen-specific interleukin-5 and interferon-gamma responses in human lymphatic filariasis as a function of clinical status and age. *J.Infect.Dis.* 1997. 175: 1276-1280.
116. Sartono,E., Kruize,Y.C., Kurniawan,A., van der Meide,P.H., Partono,F., Maizels,R.M., and Yazdanbakhsh,M., Elevated cellular immune responses and interferon-gamma release after long-term diethylcarbamazine treatment of patients with human lymphatic filariasis. *J.Infect.Dis.* 1995. 171: 1683-1687.
117. Mahanty,S., Luke,H.E., Kumaraswami,V., Narayanan,P.R., Vijayshekaran,V., and Nutman,T.B., Stage-specific induction of cytokines regulates the immune response in lymphatic filariasis. *Exp.Parasitol.* 1996. 84: 282-290.
118. Gopinath,R., Hanna,L.E., Kumaraswami,V., Perumal,V., Kavitha,V., Vijayasekaran,V., and Nutman,T.B., Perturbations in eosinophil homeostasis following treatment of lymphatic filariasis. *Infect.Immun.* 2000. 68: 93-99.
119. Ravichandran,M., Mahanty,S., Kumaraswami,V., Nutman,T.B., and Jayaraman,K., Elevated IL-10 mRNA expression and downregulation of Th1-type cytokines in microfilaraemic individuals with Wuchereria bancrofti infection. *Parasite Immunol.* 1997. 19: 69-77.
120. Mahanty,S., Ravichandran,M., Raman,U., Jayaraman,K., Kumaraswami,V., and Nutman,T.B., Regulation of parasite antigen-driven immune responses by interleukin-10 (IL-10) and IL-12 in lymphatic filariasis. *Infect.Immun.* 1997. 65: 1742-1747.
121. Lawrence,R.A. and Devaney,E., Lymphatic filariasis: parallels between the immunology of infection in humans and mice. *Parasite Immunol.* 2001. 23: 353-361.
122. Geiger,S.M., Massara,C.L., Bethony,J., Soboslay,P.T., Carvalho,O.S., and Correa-Oliveira,R., Cellular responses and cytokine profiles in Ascaris lumbricoides and Trichuris trichiura infected patients. *Parasite Immunol.* 2002. 24: 499-509.
123. Schopf,L.R., Hoffmann,K.F., Cheever,A.W., Urban,J.F., Jr., and Wynn,T.A., IL-10 is critical for host resistance and survival during gastrointestinal helminth infection. *J.Immunol.* 2002. 168: 2383-2392.
124. Bradley,J.E. and Jackson,J.A., Immunity, immunoregulation and the ecology of trichuriasis and ascariasis. *Parasite Immunol.* 2004. 26: 429-441.
125. Maloy,K.J. and Powrie,F., Regulatory T cells in the control of immune pathology. *Nat.Immunol.* 2001. 2: 816-822.
126. Sakaguchi,S., Sakaguchi,N., Shimizu,J., Yamazaki,S., Sakihama,T., Itoh,M., Kuniyasu,Y., Nomura,T., Toda,M., and Takahashi,T., Immunologic tolerance maintained by CD25+ CD4+ regulatory T cells: their common role in controlling autoimmunity, tumor immunity, and transplantation tolerance. *Immunol.Rev.* 2001. 182:18-32.: 18-32.
127. Shevach,E.M., CD4+ CD25+ suppressor T cells: more questions than answers. *Nat.Rev.Immunol.* 2002. 2: 389-400.
128. Groux,H. and Powrie,F., Regulatory T cells and inflammatory bowel disease. *Immunol.Today* 1999. 20: 442-445.
129. O'Garra,A., Vieira,P.L., Vieira,P., and Goldfeld,A.E., IL-10-producing and naturally occurring CD4+ Tregs: limiting collateral damage. *J Clin.Invest* 2004. 114: 1372-1378.

130. Beissert,S., Schwarz,A., and Schwarz,T., Regulatory T cells. *J.Invest Dermatol.* 2006. 126: 15-24.
131. Cottrez,F., Hurst,S.D., Coffman,R.L., and Groux,H., T regulatory cells 1 inhibit a Th2-specific response in vivo. *J Immunol.* 2000. 165: 4848-4853.
132. Akdis,M., Verhagen,J., Taylor,A., Karamloo,F., Karagiannidis,C., Crameri,R., Thunberg,S., Deniz,G., Valenta,R., Fiebig,H., Kegel,C., Disch,R., Schmidt-Weber,C.B., Blaser,K., and Akdis,C.A., Immune responses in healthy and allergic individuals are characterized by a fine balance between allergen-specific T regulatory 1 and T helper 2 cells. *J Exp.Med* 2004. 199: 1567-1575.
133. Jutel,M., Akdis,M., Budak,F., Aebischer-Casaulta,C., Wrzyszcz,M., Blaser,K., and Akdis,C.A., IL-10 and TGF-beta cooperate in the regulatory T cell response to mucosal allergens in normal immunity and specific immunotherapy. *Eur.J Immunol.* 2003. 33: 1205-1214.
134. Taylor,A., Verhagen,J., Akdis,C.A., and Akdis,M., T regulatory cells and allergy. *Microbes.Infect.* 2005. 7: 1049-1055.
135. Berg,D.J., Davidson,N., Kuhn,R., Muller,W., Menon,S., Holland,G., Thompson-Snipes,L., Leach,M.W., and Rennick,D., Enterocolitis and colon cancer in interleukin-10-deficient mice are associated with aberrant cytokine production and CD4(+) TH1-like responses. *J.Clin.Invest.* 1996. 98: 1010-1020.
136. Duchmann,R., Schmitt,E., Knolle,P., Meyer zum Buschenfelde,K.H., and Neurath,M., Tolerance towards resident intestinal flora in mice is abrogated in experimental colitis and restored by treatment with interleukin-10 or antibodies to interleukin-12. *Eur.J.Immunol.* 1996. 26: 934-938.
137. Elliott,D.E., Urban,J.F., Jr., Argo,C.K., and Weinstock,J.V., Does the failure to acquire helminthic parasites predispose to Crohn's disease? *FASEB J.* 2000. 14: 1848-1855.
138. Khan,W.I., Blennerhasset,P.A., Varghese,A.K., Chowdhury,S.K., Omsted,P., Deng,Y., and Collins,S.M., Intestinal nematode infection ameliorates experimental colitis in mice. *Infect.Immun.* 2002. 70: 5931-5937.
139. Takeda,K., Kaisho,T., and Akira,S., Toll-like receptors. *Annu.Rev.Immunol.* 2003. 21:335-76. Epub@2001 Dec@19.: 335-376.
140. Aksoy,E., Zouain,C.S., Vanhoutte,F., Fontaine,J., Pavelka,N., Thieblemont,N., Willems,F., Ricciardi-Castagnoli,P., Goldman,M., Capron,M., Ryffel,B., and Trottein,F., Double-stranded RNAs from the helminth parasite Schistosoma activate TLR3 in dendritic cells. *J.Biol.Chem.* 2005. 280: 277-283.
141. Kane,C.M., Cervi,L., Sun,J., McKee,A.S., Masek,K.S., Shapira,S., Hunter,C.A., and Pearce,E.J., Helminth antigens modulate TLR-initiated dendritic cell activation. *J.Immunol.* 2004. 173: 7454-7461.
142. Goodridge,H.S., Marshall,F.A., Else,K.J., Houston,K.M., Egan,C., Al Riyami,L., Liew,F.Y., Harnett,W., and Harnett,M.M., Immunomodulation via novel use of TLR4 by the filarial nematode phosphorylcholine-containing secreted product, ES-62. *J.Immunol.* 2005. 174: 284-293.
143. van der,K.D., van den Biggelaar,A.H., Kruize,Y.C., Retra,K., Fillie,Y., Schmitz,M., Kremsner,P.G., Tielens,A.G., and Yazdanbakhsh,M., Responses to Toll-like receptor ligands in children living in areas where schistosome infections are endemic. *J.Infect.Dis.* 2004. 189: 1044-1051.
144. Babu,S., Blauvelt,C.P., Kumaraswami,V., and Nutman,T.B., Diminished expression and function of TLR in lymphatic filariasis: a novel mechanism of immune dysregulation. *J.Immunol.* 2005. 175: 1170-1176.
145. Marquet,S., Abel,L., Hillaire,D., Dessein,H., Kalil,J., Feingold,J., Weissenbach,J., and Dessein,A.J., Genetic localization of a locus controlling the intensity of infection by Schistosoma mansoni on chromosome 5q31-q33. *Nat.Genet.* 1996. 14: 181-184.
146. Dessein,A.J., Hillaire,D., Elwali,N.E., Marquet,S., Mohamed-Ali,Q., Mirghani,A., Henri,S., Abdelhameed,A.A., Saeed,O.K., Magzoub,M.M., and Abel,L., Severe hepatic fibrosis in Schistosoma mansoni infection is controlled by a major locus that is closely linked to the interferon-gamma receptor gene. *Am.J.Hum.Genet.* 1999. 65: 709-721.
147. Williams-Blangero,S., VandeBerg,J.L., Subedi,J., Aivaliotis,M.J., Rai,D.R., Upadhayay,R.P., Jha,B., and Blangero,J., Genes on chromosomes 1 and 13 have significant effects on Ascaris infection. *Proc.Natl.Acad.Sci.U.S.A.* 2002. 99: 5533-5538.
148. Chan,S.H., Dissanayake,S., Mak,J.W., Ismail,M.M., Wee,G.B., Srinivasan,N., Soo,B.H., and Zaman,V., HLA and filariasis in Sri Lankans and Indians. *Southeast Asian J.Trop.Med.Public Health* 1984. 15: 281-286.
149. Yazdanbakhsh,M., Sartono,E., Kruize,Y.C., Kurniawan,A., Partono,F., Maizels,R.M., Schreuder,G.M., Schipper,R., and de Vries,R.R., HLA and elephantiasis in lymphatic filariasis. *Hum.Immunol.* 1995. 44: 58-61.
150. Yazdanbakhsh,M., Abadi,K., de Roo,M., van Wouwe,L., Denham,D., Medeiros,F., Verduijn,W., Schreuder,G.M., Schipper,R., Giphart,M.J., and de Vries,R.R., HLA and elephantiasis revisited. *Eur.J.Immunogenet.* 1997. 24: 439-442.
151. Das,P.K., Sirvidya,A., Vanamail,P., Ramaiah,K.D., Pani,S.P., Michael,E., and Bundy,D.A., Wuchereria bancrofti microfilaraemia in children in relation to parental infection status. *Trans.R.Soc.Trop.Med.Hyg.* 1997. 91: 677-679.
152. Braga,C., Albuquerque,M.F., Schindler,H.C., Silva,M.R., Maciel,A., Furtado,A., Carvalho,A.B., Souza,W., and Ximenes,R.A., Risk factors for the occurrence of bancroftian filariasis infection in children living in endemic areas of northeast of Brazil. *J.Trop.Pediatr.* 1998. 44: 87-91.

153. de Albuquerque,M.F., Marzochi,M.C., Ximenes,R.A., Braga,M.C., Silva,M.C., and Furtado,A.F., Bancroftian filariasis in two urban areas of Recife, Brasil: the role of individual risk factors. *Rev.Inst.Med.Trop.Sao Paulo* 1995. 37: 225-233.
154. Forrester,J.E., Scott,M.E., Bundy,D.A., and Golden,M.H., Clustering of Ascaris lumbricoides and Trichuris trichiura infections within households. *Trans.R.Soc.Trop.Med.Hyg.* 1988. 82: 282-288.
155. Pawitan,Y., Reilly,M., Nilsson,E., Cnattingius,S., and Lichtenstein,P., Estimation of genetic and environmental factors for binary traits using family data. *Stat.Med.* 2004. 23: 449-465.
156. Lee,Y. and Nelder,J.A., Analysis of ulcer data using hierarchical generalized linear models. *Stat.Med.* 2002. 21: 191-202.
157. Mutapi,F., Mduluza,T., and Roddam,A.W., Cluster analysis of schistosome-specific antibody responses partitions the population into distinct epidemiological groups. *Immunol.Lett.* 2005. 96: 231-240.
158. Walter,S.D., On the detection of household aggregation of disease. *Biometrics* 1974. 30: 525-538.
159. Ottesen,E.A., Mendell,N.R., MacQueen,J.M., Weller,P.F., Amos,D.B., and Ward,F.E., Familial predisposition to filarial infection—not linked to HLA-A or-B locus specificities. *Acta Trop.* 1981. 38: 205-216.
160. Terhell,A.J., Houwing-Duistermaat,J.J., Ruiterman,Y., Haarbrink,M., Abadi,K., and Yazdanbakhsh,M., Clustering of Brugia malayi infection in a community in South-Sulawesi, Indonesia. *Parasitology* 2000. 120: 23-29.
161. Williams-Blangero,S., Subedi,J., Upadhayay,R.P., Manral,D.B., Rai,D.R., Jha,B., Robinson,E.S., and Blangero,J., Genetic analysis of susceptibility to infection with Ascaris lumbricoides. *Am.J.Trop.Med.Hyg.* 1999. 60: 921-926.
162. Aberg,N., Hesselmar,B., Aberg,B., and Eriksson,B., Increase of asthma, allergic rhinitis and eczema in Swedish schoolchildren between 1979 and 1991. *Clin.Exp.Allergy* 1995. 25: 815-819.
163. Ninan,T.K. and Russell,G., Respiratory symptoms and atopy in Aberdeen schoolchildren: evidence from two surveys 25 years apart. *BMJ* 1992. 304: 873-875.
164. Quyen,D.T., Irei,A.V., Sato,Y., Ota,F., Fujimaki,Y., Sakai,T., Kunii,D., Khan,N.C., and Yamamoto,S., Nutritional factors, parasite infection and allergy in rural and suburban Vietnamese school children. *J.Med.Invest* 2004. 51: 171-177.
165. Hijazi,N., Abalkhail,B., and Seaton,A., Asthma and respiratory symptoms in urban and rural Saudi Arabia. *Eur.Respir.J.* 1998. 12: 41-44.
166. Hasan,M.M., Gofin,R., and Bar-Yishay,E., Urbanization and the risk of asthma among schoolchildren in the Palestinian Authority. *J.Asthma* 2000. 37: 353-360.
167. Chakravarthy,S., Singh,R.B., Swaminathan,S., and Venkatesan,P., Prevalence of asthma in urban and rural children in Tamil Nadu. *Natl.Med.J.India* 2002. 15: 260-263.
168. Yemaneberhan,H., Bekele,Z., Venn,A., Lewis,S., Parry,E., and Britton,J., Prevalence of wheeze and asthma and relation to atopy in urban and rural Ethiopia. *Lancet* 1997. 350: 85-90.
169. Odhiambo,J.A., Ng'ang'a,L.W., Mungai,M.W., Gicheha,C.M., Nyamwaya,J.K., Karimi,F., Macklem,P.T., and Becklake,M.R., Urban-rural differences in questionnaire-derived markers of asthma in Kenyan school children. *Eur.Respir.J* 1998. 12: 1105-1112.
170. Dagoye,D., Bekele,Z., Woldemichael,K., Nida,H., Yimam,M., Hall,A., Venn,A.J., Britton,J.R., Hubbard,R., and Lewis,S.A., Wheezing, allergy, and parasite infection in children in urban and rural Ethiopia. *Am.J.Respir.Crit Care Med.* 2003. 167: 1369-1373.
171. Maia,J.G., Marcopito,L.F., Amaral,A.N., Tavares,B.F., and Santos,F.A., [Prevalence of asthma and asthma symptoms among 13 and 14-year-old schoolchildren, Brazil]. *Rev.Saude Publica* 2004. 38: 292-299.
172. Leung,R.C., Carlin,J.B., Burdon,J.G., and Czarny,D., Asthma, allergy and atopy in Asian immigrants in Melbourne. *Med J Aust.* 1994. 161: 418-425.
173. Gruber,C., Illi,S., Plieth,A., Sommerfeld,C., and Wahn,U., Cultural adaptation is associated with atopy and wheezing among children of Turkish origin living in Germany. *Clin.Exp.Allergy* 2002. 32: 526-531.
174. Garty,B.Z., Kosman,E., Ganor,E., Berger,V., Garty,L., Wietzen,T., Waisman,Y., Mimouni,M., and Waisel,Y., Emergency room visits of asthmatic children, relation to air pollution, weather, and airborne allergens. *Ann.Allergy Asthma Immunol.* 1998. 81: 563-570.
175. Wong,G.W., Ko,F.W., Lau,T.S., Li,S.T., Hui,D., Pang,S.W., Leung,R., Fok,T.F., and Lai,C.K., Temporal relationship between air pollution and hospital admissions for asthmatic children in Hong Kong. *Clin.Exp.Allergy.* 2001. 31: 565-569.
176. Morgan,W.J., Crain,E.F., Gruchalla,R.S., O'Connor,G.T., Kattan,M., Evans,R., III, Stout,J., Malindzak,G., Smartt,E., Plaut,M., Walter,M., Vaughn,B., and Mitchell,H., Results of a home-based environmental intervention among urban children with asthma. *N.Engl.J.Med.* 2004. 351: 1068-1080.
177. Hodge,L., Salome,C.M., Hughes,J.M., Liu-Brennan,D., Rimmer,J., Allman,M., Pang,D., Armour,C., and Woolcock,A.J., Effect of dietary intake of omega-3 and omega-6 fatty acids on severity of asthma in children. *Eur.Respir.J.* 1998. 11: 361-365.
178. Chen,R., Hu,Z., and Seaton,A., Eating more vegetables might explain reduced asthma symptoms. *BMJ.* 2004. 328: 1380.
179. von Mutius,E., Infection: friend or foe in the development of atopy and asthma? The epidemiological evidence. *Eur.Respir.J.* 2001. 18: 872-881.

180. Yazdanbakhsh,M., Kremsner,P.G., and Van Ree,R., Allergy, parasites, and the hygiene hypothesis. *Science* 2002. %19;296: 490-494.
181. Norzila,M.Z., Haifa,A.L., Deng,C.T., and Azizi,B.H., Prevalence of childhood asthma and allergy in an inner city Malaysian community: intra-observer reliability of two translated international questionnaires. *Med J Malaysia* 2000. 55: 33-39.
182. Haileamlak,A., Lewis,S.A., Britton,J., Venn,A.J., Woldemariam,D., Hubbard,R., and Williams,H.C., Validation of the International Study of Asthma and Allergies in Children (ISAAC) and U.K. criteria for atopic eczema in Ethiopian children. *Br.J Dermatol.* 2005. 152: 735-741.
183. Selnes,A., Bolle,R., Holt,J., and Lund,E., Atopic diseases in Sami and Norse schoolchildren living in northern Norway. *Pediatr.Allergy Immunol.* 1999. 10: 216-220.
184. Ng,T.P., Hui,K.P., and Tan,W.C., Prevalence of asthma and risk factors among Chinese, Malay, and Indian adults in Singapore. *Thorax* 1994. 49: 347-351.
185. Chia,S.E., Lim,W.K., and Koh,D., A prevalence study of chronic rhinitis among residents in Telok Blangah Town, Singapore. *Ann.Acad.Med Singapore* 1994. 23: 358-362.
186. Gibson,P.G., Henry,R., Shah,S., Toneguzzi,R., Francis,J.L., Norzila,M.Z., and Davies,H., Validation of the ISAAC video questionnaire (AVQ3.0) in adolescents from a mixed ethnic background. *Clin.Exp.Allergy* 2000. 30: 1181-1187.
187. Crane,J., Mallol,J., Beasley,R., Stewart,A., and Asher,M.I., Agreement between written and video questions for comparing asthma symptoms in ISAAC. *Eur.Respir.J* 2003. 21: 455-461.
188. Pizzichini,M.M., Rennie,D., Senthilselvan,A., Taylor,B., Habbick,B.F., and Sears,M.R., Limited agreement between written and video asthma symptom questionnaires. *Pediatr.Pulmonol.* 2000. 30: 307-312.
189. Phankingthongkum,S., Daengsuwan,T., Visitsunthorn,N., Thamlikitkul,V., Udompunthuruk,S., and Vichyanond,P., How do Thai children and adolescents describe asthma symptoms? *Pediatr.Allergy Immunol.* 2002. 13: 119-124.
190. Burke,W., Fesinmeyer,M., Reed,K., Hampson,L., and Carlsten,C., Family history as a predictor of asthma risk. *Am.J.Prev.Med.* 2003. 24: 160-169.
191. Wills-Karp,M. and Ewart,S.L., Time to draw breath: asthma-susceptibility genes are identified. *Nat.Rev.Genet.* 2004. 5: 376-387.
192. Furuhashi,M., Sugiura,K., Katsumata,Y., Oda,H., Murase,Y., and Imai,N., Cord blood IgE against milk and egg antigens. *Biol.Neonate* 1997. 72: 210-215.
193. Liu,C.A., Wang,C.L., Chuang,H., Ou,C.Y., Hsu,T.Y., and Yang,K.D., Prenatal prediction of infant atopy by maternal but not paternal total IgE levels. *J.Allergy Clin.Immunol.* 2003. 112: 899-904.
194. Magnusson,C.G., Cord serum IgE in relation to family history and as predictor of atopic disease in early infancy. *Allergy* 1988. 43: 241-251.
195. Johnson,C.C., Ownby,D.R., and Peterson,E.L., Parental history of atopic disease and concentration of cord blood IgE. *Clin.Exp.Allergy* 1996. 26: 624-629.
196. Michel,F.B., Bousquet,J., Greillier,P., Robinet-Levy,M., and Coulomb,Y., Comparison of cord blood immunoglobulin E concentrations and maternal allergy for the prediction of atopic diseases in infancy. *J.Allergy Clin.Immunol.* 1980. 65: 422-430.
197. Kjellman,N.I. and Croner,S., Cord blood IgE determination for allergy prediction—a follow-up to seven years of age in 1,651 children. *Ann.Allergy* 1984. 53: 167-171.
198. Hansen,L.G., Host,A., Halken,S., Holmskov,A., Husby,S., Lassen,L.B., Storm,K., and Osterballe,O., Cord blood IgE. III. Prediction of IgE high-response and allergy. A follow-up at the age of 18 months. *Allergy* 1992. 47: 404-410.
199. Edenharter,G., Bergmann,R.L., Bergmann,K.E., Wahn,V., Forster,J., Zepp,F., and Wahn,U., Cord blood-IgE as risk factor and predictor for atopic diseases. *Clin.Exp.Allergy* 1998. 28: 671-678.
200. Halonen,M., Stern,D., Lyle,S., Wright,A., Taussig,L., and Martinez,F.D., Relationship of total serum IgE levels in cord and 9-month sera of infants. *Clin.Exp.Allergy* 1991. 21: 235-241.
201. Hansen,L.G., Halken,S., Host,A., Moller,K., and Osterballe,O., Prediction of allergy from family history and cord blood IgE levels. A follow-up at the age of 5 years. Cord blood IgE. IV. *Pediatr.Allergy Immunol.* 1993. 4: 34-40.
202. von Mutius,E., Environmental factors influencing the development and progression of pediatric asthma. *J.Allergy Clin.Immunol.* 2002. 109: S525-S532.
203. Arshad,S.H., Indoor allergen exposure in the development of allergy and asthma. *Curr.Allergy Asthma Rep.* 2003. 3: 115-120.
204. Heinrich,J. and Wichmann,H.E., Traffic related pollutants in Europe and their effect on allergic disease. *Curr.Opin.Allergy Clin.Immunol.* 2004. 4: 341-348.
205. Gergen,P.J., Environmental tobacco smoke as a risk factor for respiratory disease in children. *Respir.Physiol* 2001. 128: 39-46.
206. Hopkin,J.M., Early life receipt of antibiotics and atopic disorder. *Clin.Exp.Allergy* 1999. 29: 733-734.
207. Matricardi,P.M., Prevalence of atopy and asthma in eastern versus western Europe: why the difference? *Ann.Allergy Asthma Immunol.* 2001. 87: 24-27.
208. Riedler,J., Braun-Fahrlander,C., Eder,W., Schreuer,M., Waser,M., Maisch,S., Carr,D., Schierl,R.,

Nowak,D., and von Mutius,E., Exposure to farming in early life and development of asthma and allergy: a cross-sectional survey. *Lancet* 2001. 358: 1129-1133.
209. Perzanowski,M.S., Ronmark,E., Platts-Mills,T.A., and Lundback,B., Effect of cat and dog ownership on sensitization and development of asthma among preteenage children. *Am.J.Respir.Crit Care Med.* 2002. 166: 696-702.
210. Sheikh,A. and Strachan,D.P., The hygiene theory: fact or fiction? *Curr.Opin.Otolaryngol.Head Neck Surg.* 2004. 12: 232-236.
211. Strachan,D.P., Hay fever, hygiene, and household size. *BMJ.* 1989. 299: 1259-1260.
212. Peisong,G., Yamasaki,A., Mao,X.Q., Enomoto,T., Feng,Z., Gloria-Bottini,F., Bottini,E., Shirakawa,T., Sun,D., and Hopkin,J.M., An asthma-associated genetic variant of STAT6 predicts low burden of ascaris worm infestation. *Genes Immun.* 2004. 5: 58-62.
213. McKay,D.M. and Khan,W.I., STAT-6 is an absolute requirement for murine rejection of Hymenolepis diminuta. *J.Parasitol.* 2003. 89: 188-189.
214. Worldwide variation in prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and atopic eczema: ISAAC. The International Study of Asthma and Allergies in Childhood (ISAAC) Steering Committee. *Lancet* 1998. 351: 1225-1232.
215. Departemen Kesehatan Republik Indonesia. Survey kesehatan rumah tangga Indonesia. 1996. Ref Type: Report
216. Departemen Kesehatan Republik Indonesia. Survey kesehatan rumah tangga Indonesia. 1992. Ref Type: Report
217. Kunii,O., Kanagawa,S., Yajima,I., Hisamatsu,Y., Yamamura,S., Amagai,T., and Ismail,I.T., The 1997 haze disaster in Indonesia: its air quality and health effects. *Arch.Environ.Health* 2002. 57: 16-22.
218. Baratawidjaja,I.R., Baratawidjaja,P.P., Darwis,A., Soo-Hwee,L., Fook-Tim,C., Bee-Wah,L., and Baratawidjaja,K.G., Prevalence of allergic sensitization to regional inhalants among allergic patients in Jakarta, Indonesia. *Asian Pac.J Allergy Immunol.* 1999. 17: 9-12.
219. Matondang,C.S., Spectrum of asthma in children visiting the outpatient clinic of the subdivision of allergy and immunology. *Paediatr.Indones.* 1991. 31: 150-164.
220. Bindslev-Jensen,C., Changing definitions of allergy. In Isolauri,E. and Walker,W.A. (Eds.) *Allergic diseases and the environment*. Nestec Ltd and S Karger AG, Switzerland 2004, pp 27-32.
221. Parham,P., Over reactions of the immune system in The immune system. Garland science, 2005, pp 311-331.
222. Holt,P.G., Macaubas,C., Stumbles,P.A., and Sly,P.D., The role of allergy in the development of asthma. *Nature* 1999. 402: B12-B17.
223. Galli,S.J., Nakae,S., and Tsai,M., Mast cells in the development of adaptive immune responses. *Nat.Immunol.* 2005. 6: 135-142.
224. Romagnani,S., Th2-predominant disease? pro. In Isolauri,E. and Walker,W.A. (Eds.) *Allergic diseases and the environment*. Nestec Ltd and S Karger AG, Switzerland 2004, pp 69-95.
225. Noon,L. and Cantab,B.C., Prophylactic inoculation againts hay fever. *Lancet* 1911. 1: 1572-1574.
226. Bousquet,J., Lockey,R., Malling,H.J., Alvarez-Cuesta,E., Canonica,G.W., Chapman,M.D., Creticos,P.J., Dayer,J.M., Durham,S.R., Demoly,P., Goldstein,R.J., Ishikawa,T., Ito,K., Kraft,D., Lambert,P.H., Lowenstein,H., Muller,U., Norman,P.S., Reisman,R.E., Valenta,R., Valovirta,E., and Yssel,H., Allergen immunotherapy: therapeutic vaccines for allergic diseases. World Health Organization. American academy of Allergy, Asthma and Immunology. *Ann.Allergy Asthma Immunol.* 1998. 81: 401-405.
227. Huggins,J.L. and Looney,R.J., Allergen immunotherapy. *Am.Fam.Physician.* 2004. 70: 689-696.
228. Akdis,C.A., Blaser,K., and Akdis,M., Mechanisms of allergen-specific immunotherapy. *Chem.Immunol.Allergy.* 2006. 91:195-203.: 195-203.
229. Blaser,K. and Akdis,C.A., Interleukin-10, T regulatory cells and specific allergy treatment. *Clin.Exp.Allergy* 2004. 34: 328-331.
230. Wachholz,P.A. and Durham,S.R., Mechanisms of immunotherapy: IgG revisited. *Curr.Opin.Allergy Clin.Immunol.* 2004. 4: 313-318.
231. Platts-Mills,T.A., Vaughan,J.W., Blumenthal,K., Pollart,S.S., and Sporik,R.B., Serum IgG and IgG4 antibodies to Fel d 1 among children exposed to 20 microg Fel d 1 at home: relevance of a nonallergic modified Th2 response. *Int.Arch.Allergy Immunol.* 2001. 124: 126-129.
232. Ball,T., Sperr,W.R., Valent,P., Lidholm,J., Spitzauer,S., Ebner,C., Kraft,D., and Valenta,R., Induction of antibody responses to new B cell epitopes indicates vaccination character of allergen immunotherapy. *Eur.J.Immunol.* 1999. 29: 2026-2036.
233. Ball,T., Fuchs,T., Sperr,W.R., Valent,P., Vangelista,L., Kraft,D., and Valenta,R., B cell epitopes of the major timothy grass pollen allergen, phl p 1, revealed by gene fragmentation as candidates for immunotherapy. *FASEB J.* 1999. 13: 1277-1290.
234. Clinton,P.M., Kemeny,D.M., Youlten,L.J., and Lessof,M.H., Histamine release from peripheral blood leukocytes with purified bee venom allergens: effect of hyperimmune beekeeper plasma. *Int.Arch.Allergy Appl.Immunol.* 1989. 89: 43-48.
235. Daeron,M., Malbec,O., Latour,S., Espinosa,E., Pina,P., and Fridman,W.H., Regulation of tyrosine-containing activation motif-dependent cell signalling by Fc gamma RII. *Immunol.Lett.* 1995. 44: 119-123.

236. Strait,R.T., Morris,S.C., and Finkelman,F.D., IgG-blocking antibodies inhibit IgE-mediated anaphylaxis in vivo through both antigen interception and FcgammaRIIb cross-linking. *J.Clin.Invest.* 2006. 116: 833-841.
237. Galli,S.J., Kalesnikoff,J., Grimbaldeston,M.A., Piliponsky,A.M., Williams,C.M., and Tsai,M., Mast cells as "tunable" effector and immunoregulatory cells: recent advances. *Annu.Rev.Immunol.* 2005. 23:749-86.: 749-786.
238. Jeannin,P., Lecoanet-Henchoz,S., Delneste,Y., Gauchat,J.F., and Bonnefoy,J.Y., Alpha-1 antitrypsin up-regulates human B cell differentiation selectively into IgE- and IgG4- secreting cells. *Eur.J.Immunol.* 1998. 28: 1815-1822.
239. Borchers,A.T., Keen,C.L., and Gershwin,M.E., Fatalities following allergen immunotherapy. *Clin.Rev.Allergy Immunol.* 2004. 27: 147-158.
240. Passalacqua,G., Baena-Cagnani,C.E., Berardi,M., and Canonica,G.W., Oral and sublingual immunotherapy in paediatric patients. *Curr.Opin.Allergy Clin.Immunol.* 2003. 3: 139-145.
241. van den Biggelaar,A.H., Van Ree,R., Rodrigues,L.C., Lell,B., Deelder,A.M., Kremsner,P.G., and Yazdanbakhsh,M., Decreased atopy in children infected with Schistosoma haematobium: a role for parasite-induced interleukin-10. *Lancet* 2000. 356: 1723-1727.
242. Araujo,M.I., Lopes,A.A., Medeiros,M., Cruz,A.A., Sousa-Atta,L., Sole,D., and Carvalho,E.M., Inverse association between skin response to aeroallergens and Schistosoma mansoni infection. *Int.Arch.Allergy Immunol.* 2000. 123: 145-148.
243. Medeiros,M., Jr., Figueiredo,J.P., Almeida,M.C., Matos,M.A., Araujo,M.I., Cruz,A.A., Atta,A.M., Rego,M.A., de Jesus,A.R., Taketomi,E.A., and Carvalho,E.M., Schistosoma mansoni infection is associated with a reduced course of asthma. *J.Allergy Clin.Immunol.* 2003. 111: 947-951.
244. Medeiros,M., Jr., Almeida,M.C., Figueiredo,J.P., Atta,A.M., Mendes,C.M., Araujo,M.I., Taketomi,E.A., Terra,S.A., Silva,D.A., and Carvalho,E.M., Low frequency of positive skin tests in asthmatic patients infected with Schistosoma mansoni exposed to high levels of mite allergens. *Pediatr.Allergy Immunol.* 2004. 15: 142-147.
245. Ottesen,E.A. and Nutman,T.B., Tropical pulmonary eosinophilia. *Annu.Rev.Med.* 1992. 43:417-24.: 417-424.
246. Ong,R.K. and Doyle,R.L., Tropical pulmonary eosinophilia. *Chest* 1998. 113: 1673-1679.
247. Shield,J.M., Scrimgeour,E.M., and Vaterlaws,A.L., Intestinal helminths in an adult hospital population in the Eastern Highlands of Papua New Guinea: relationship with anaemia, eosinophilia and asthma. *P.N.G.Med.J.* 1980. 23: 157-164.
248. Lynch,N.R., Hagel,I., Perez,M., Di Prisco,M.C., Lopez,R., and Alvarez,N., Effect of anthelmintic treatment on the allergic reactivity of children in a tropical slum. *J.Allergy Clin.Immunol.* 1993. 92: 404-411.
249. Nyan,O.A., Walraven,G.E., Banya,W.A., Milligan,P., Van Der,S.M., Ceesay,S.M., Del Prete,G., and McAdam,K.P., Atopy, intestinal helminth infection and total serum IgE in rural and urban adult Gambian communities. *Clin.Exp.Allergy* 2001. 31: 1672-1678.
250. Cooper,P.J., Chico,M.E., Rodrigues,L.C., Ordonez,M., Strachan,D., Griffin,G.E., and Nutman,T.B., Reduced risk of atopy among school-age children infected with geohelminth parasites in a rural area of the tropics. *J.Allergy Clin.Immunol.* 2003. 111: 995-1000.
251. Scrivener,S., Yemaneberhan,H., Zebenigus,M., Tilahun,D., Girma,S., Ali,S., McElroy,P., Custovic,A., Woodcock,A., Pritchard,D., Venn,A., and Britton,J., Independent effects of intestinal parasite infection and domestic allergen exposure on risk of wheeze in Ethiopia: a nested case-control study. *Lancet* 2001. 358: 1493-1499.
252. Dold,S., Heinrich,J., Wichmann,H.E., and Wjst,M., Ascaris-specific IgE and allergic sensitization in a cohort of school children in the former East Germany. *J.Allergy Clin.Immunol.* 1998. 102: 414-420.
253. Palmer,L.J., Celedon,J.C., Weiss,S.T., Wang,B., Fang,Z., and Xu,X., Ascaris lumbricoides infection is associated with increased risk of childhood asthma and atopy in rural China. *Am.J.Respir.Crit Care Med.* 2002. 165: 1489-1493.
254. Haileamlak,A., Dagoye,D., Williams,H., Venn,A.J., Hubbard,R., Britton,J., and Lewis,S.A., Early life risk factors for atopic dermatitis in Ethiopian children. *J.Allergy Clin.Immunol.* 2005. 115: 370-376.
255. Davey,G., Venn,A., Belete,H., Berhane,Y., and Britton,J., Wheeze, allergic sensitization and geohelminth infection in Butajira, Ethiopia. *Clin.Exp.Allergy* 2005. 35: 301-307.
256. Selassie,F.G., Stevens,R.H., Cullinan,P., Pritchard,D., Jones,M., Harris,J., Ayres,J.G., and Newman Taylor,A.J., Total and specific IgE (house dust mite and intestinal helminths) in asthmatics and controls from Gondar, Ethiopia. *Clin.Exp.Allergy* 2000. 30: 356-358.
257. Carswell,F., Merrett,J., Merrett,T.G., Meakins,R.H., and Harland,P.S., IgE, parasites and asthma in Tanzanian children. *Clin.Allergy* 1977. 7: 445-453.
258. Cooper,P.J., Can intestinal helminth infections (geohelminths) affect the development and expression of asthma and allergic disease? *Clin.Exp.Immunol.* 2002. 128: 398-404.
259. Cooper,P.J., Chico,M.E., Bland,M., Griffin,G.E., and Nutman,T.B., Allergic symptoms, atopy, and geohelminth infections in a rural area of Ecuador. *Am.J Respir.Crit Care Med* 2003. 168: 313-317.
260. Wilson,M.S., Taylor,M.D., Balic,A., Finney,C.A., Lamb,J.R., and Maizels,R.M., Suppression of allergic

airway inflammation by helminth-induced regulatory T cells. *J.Exp.Med.* 2005. 202: 1199-1212.
261. Lima,C., Perini,A., Garcia,M.L., Martins,M.A., Teixeira,M.M., and Macedo,M.S., Eosinophilic inflammation and airway hyper-responsiveness are profoundly inhibited by a helminth (Ascaris suum) extract in a murine model of asthma. *Clin.Exp.Allergy* 2002. 32: 1659-1666.
262. Elliott,D.E., Setiawan,T., Metwali,A., Blum,A., Urban,J.F., Jr., and Weinstock,J.V., Heligmosomoides polygyrus inhibits established colitis in IL-10-deficient mice. *Eur.J.Immunol.* 2004. 34: 2690-2698.
263. Elliott,D.E., Li,J., Blum,A., Metwali,A., Qadir,K., Urban,J.F., Jr., and Weinstock,J.V., Exposure to schistosome eggs protects mice from TNBS-induced colitis. *Am.J.Physiol Gastrointest.Liver Physiol* 2003. 284: G385-G391.
264. van den Biggelaar,A.H., Rodrigues,L.C., Van Ree,R., van der Zee,J.S., Hoeksma-Kruize,Y.C., Souverijn,J.H., Missinou,M.A., Borrmann,S., Kremsner,P.G., and Yazdanbakhsh,M., Long-term treatment of intestinal helminths increases mite skin-test reactivity in Gabonese schoolchildren. *J.Infect.Dis.* 2004. 189: 892-900.
265. van den Biggelaar,A.H., Lopuhaa,C., Van Ree,R., van der Zee,J.S., Jans,J., Hoek,A., Migombet,B., Borrmann,S., Luckner,D., Kremsner,P.G., and Yazdanbakhsh,M., The prevalence of parasite infestation and house dust mite sensitization in Gabonese schoolchildren. *Int.Arch.Allergy Immunol.* 2001. 126: 231-238.
266. MacGlashan,D.W., Jr., Bochner,B.S., Adelman,D.C., Jardieu,P.M., Togias,A., and Lichtenstein,L.M., Serum IgE level drives basophil and mast cell IgE receptor display. *Int.Arch.Allergy Immunol.* 1997. 113: 45-47.
267. Johansson,E., Aponno,M., Lundberg,M., and Hage-Hamsten,M., Allergenic cross-reactivity between the nematode Anisakis simplex and the dust mites Acarus siro, Lepidoglyphus destructor, Tyrophagus putrescentiae, and Dermatophagoides pteronyssinus. *Allergy* 2001. 56: 660-666.
268. Kennedy,M.W., Tierney,J., Ye,P., McMonagle,F.A., McIntosh,A., McLaughlin,D., and Smith,J.W., The secreted and somatic antigens of the third stage larva of Anisakis simplex, and antigenic relationship with Ascaris suum, Ascaris lumbricoides, and Toxocara canis. *Mol.Biochem.Parasitol.* 1988. 31: 35-46.
269. Fernandez-Caldas,E., Quirce,S., Maranon,F., Diez Gomez,M.L., Gijon,B.H., and Lopez,R.R., Allergenic cross-reactivity between third stage larvae of Hysterothylacium aduncum and Anisakis simplex. *J.Allergy Clin.Immunol.* 1998. 101: 554-555.
270. Thomas,W.R. and Smith,W., Towards defining the full spectrum of important house dust mite allergens. *Clin.Exp.Allergy* 1999. 29: 1583-1587.
271. Aalberse,R.C., Kleine,B., I, Stapel,S.O., and Van Ree,R., Structural aspects of cross-reactivity and its relation to antibody affinity. *Allergy* 2001. 56 Suppl 67:27-9.: 27-29.
272. Flicker,S. and Valenta,R., Renaissance of the blocking antibody concept in type I allergy. *Int.Arch.Allergy Immunol.* 2003. 132: 13-24.
273. Ebner,C., Siemann,U., Bohle,B., Willheim,M., Wiedermann,U., Schenk,S., Klotz,F., Ebner,H., Kraft,D., and Scheiner,O., Immunological changes during specific immunotherapy of grass pollen allergy: reduced lymphoproliferative responses to allergen and shift from TH2 to TH1 in T-cell clones specific for Phl p 1, a major grass pollen allergen. *Clin.Exp.Allergy* 1997. 27: 1007-1015.
274. Cooke,A., Tonks,P., Jones,F.M., O'Shea,H., Hutchings,P., Fulford,A.J., and Dunne,D.W., Infection with Schistosoma mansoni prevents insulin dependent diabetes mellitus in non-obese diabetic mice. *Parasite Immunol.* 1999. 21: 169-176.
275. La Flamme,A.C., Ruddenklau,K., and Backstrom,B.T., Schistosomiasis decreases central nervous system inflammation and alters the progression of experimental autoimmune encephalomyelitis. *Infect.Immun.* 2003. 71: 4996-5004.
276. Summers,R.W., Elliott,D.E., Qadir,K., Urban,J.F., Jr., Thompson,R., and Weinstock,J.V., Trichuris suis seems to be safe and possibly effective in the treatment of inflammatory bowel disease. *Am.J.Gastroenterol.* 2003. 98: 2034-2041.
277. Elias,D., Wolday,D., Akuffo,H., Petros,B., Bronner,U., and Britton,S., Effect of deworming on human T cell responses to mycobacterial antigens in helminth-exposed individuals before and after bacille Calmette-Guerin (BCG) vaccination. *Clin.Exp.Immunol.* 2001. 123: 219-225.
278. Ferreira,A.P., Aguiar,A.S., Fava,M.W., Correa,J.O., Teixeira,F.M., and Teixeira,H.C., Can the efficacy of bacille calmette-guerin tuberculosis vaccine be affected by intestinal parasitic infections? *J.Infect.Dis.* 2002. 186: 441-442.
279. Malhotra,I., Mungai,P., Wamachi,A., Kioko,J., Ouma,J.H., Kazura,J.W., and King,C.L., Helminth- and Bacillus Calmette-Guerin-induced immunity in children sensitized in utero to filariasis and schistosomiasis. *J.Immunol.* 1999. 162: 6843-6848.
280. Sabin,E.A., Araujo,M.I., Carvalho,E.M., and Pearce,E.J., Impairment of tetanus toxoid-specific Th1-like immune responses in humans infected with Schistosoma mansoni. *J.Infect.Dis.* 1996. 173: 269-272.
281. Nookala,S., Srinivasan,S., Kaliraj,P., Narayanan,R.B., and Nutman,T.B., Impairment of tetanus-specific cellular and humoral responses following tetanus vaccination in human lymphatic filariasis. *Infect.Immun.* 2004. 72: 2598-2604.
282. Cooper,P.J., Espinel,I., Paredes,W., Guderian,R.H., and Nutman,T.B., Impaired tetanus-specific cellular and humoral responses following tetanus vaccination in human onchocerciasis: a possible role for interleukin-10. *J.Infect.Dis.* 1998. 178: 1133-1138.

283. Nacher,M., Worms and malaria: noisy nuisances and silent benefits. *Parasite Immunol.* 2002. 24: 391-393.
284. Takeda,K. and Akira,S., Toll-like receptors in innate immunity. *Int.Immunol.* 2005. 17: 1-14.
285. Takeuchi,O., Hoshino,K., Kawai,T., Sanjo,H., Takada,H., Ogawa,T., Takeda,K., and Akira,S., Differential roles of TLR2 and TLR4 in recognition of gram-negative and gram-positive bacterial cell wall components. *Immunity.* 1999. 11: 443-451.
286. Alexopoulou,L., Holt,A.C., Medzhitov,R., and Flavell,R.A., Recognition of double-stranded RNA and activation of NF-kappaB by Toll-like receptor 3. *Nature.* 2001. 413: 732-738.
287. Hayashi,F., Smith,K.D., Ozinsky,A., Hawn,T.R., Yi,E.C., Goodlett,D.R., Eng,J.K., Akira,S., Underhill,D.M., and Aderem,A., The innate immune response to bacterial flagellin is mediated by Toll-like receptor 5. *Nature.* 2001. 410: 1099-1103.
288. Jurk,M., Heil,F., Vollmer,J., Schetter,C., Krieg,A.M., Wagner,H., Lipford,G., and Bauer,S., Human TLR7 or TLR8 independently confer responsiveness to the antiviral compound R-848. *Nat.Immunol.* 2002. 3: 499.
289. Hemmi,H., Takeuchi,O., Kawai,T., Kaisho,T., Sato,S., Sanjo,H., Matsumoto,M., Hoshino,K., Wagner,H., Takeda,K., and Akira,S., A Toll-like receptor recognizes bacterial DNA. *Nature.* 2000. 408: 740-745.
290. Hasan,U., Chaffois,C., Gaillard,C., Saulnier,V., Merck,E., Tancredi,S., Guiet,C., Briere,F., Vlach,J., Lebecque,S., Trinchieri,G., and Bates,E.E., Human TLR10 is a functional receptor, expressed by B cells and plasmacytoid dendritic cells, which activates gene transcription through MyD88. *J.Immunol.* 2005. 174: 2942-2950.
291. Zhang,D., Zhang,G., Hayden,M.S., Greenblatt,M.B., Bussey,C., Flavell,R.A., and Ghosh,S., A toll-like receptor that prevents infection by uropathogenic bacteria. *Science.* 2004. 303: 1522-1526.
292. Orr,T.S. and Blair,A.M., Potentiated reagin response to egg albumin and conalbumin in Nippostrongylus brasiliensis infected rats. *Life Sci.* 1969. 8: 1073-1077.
293. Jarrett,E. and Bazin,H., Elevation of total serum IgE in rats following helminth parasite infection. *Nature* 1974. 251: 613-614.
294. Gordon,J.R., Burd,P.R., and Galli,S.J., Mast cells as a source of multifunctional cytokines. *Immunol.Today* 1990. 11: 458-464.
295. Gounni,A.S., Lamkhioued,B., Ochiai,K., Tanaka,Y., Delaporte,E., Capron,A., Kinet,J.P., and Capron,M., High-affinity IgE receptor on eosinophils is involved in defence against parasites. *Nature* 1994. 367: 183-186.
296. Tanaka,Y., Takenaka,M., Matsunaga,Y., Okada,S., Anan,S., Yoshida,H., and Ra,C., High affinity IgE receptor (Fc epsilon RI) expression on eosinophils infiltrating the lesions and mite patch tested sites in atopic dermatitis. *Arch.Dermatol.Res.* 1995. 287: 712-717.
297. Hussain,R., Hamilton,R.G., Kumaraswami,V., Adkinson,N.F., Jr., and Ottesen,E.A., IgE responses in human filariasis. I. Quantitation of filaria-specific IgE. *J.Immunol.* 1981. 127: 1623-1629.
298. Dunne,D.W., Butterworth,A.E., Fulford,A.J., Kariuki,H.C., Langley,J.G., Ouma,J.H., Capron,A., Pierce,R.J., and Sturrock,R.F., Immunity after treatment of human schistosomiasis: association between IgE antibodies to adult worm antigens and resistance to reinfection. *Eur.J Immunol.* 1992. 22: 1483-1494.
299. Hagan,P., IgE and protective immunity to helminth infections. *Parasite Immunol.* 1993. 15: 1-4.
300. Hamilton,R.G., Hussain,R., Ottesen,E.A., and Adkinson,N.F., Jr., The quantitation of parasite-specific human IgG and IgE in sera: evaluation of solid-phase RIA and ELISA methodology. *J Immunol.Methods* 1981. 44: 101-114.
301. Sorice,F., Delia,S., Vullo,V., Aceti,A., and Ferone,U., [Sensitivity and specificity of the RAST (radioallergosorbent test) in biological diagnosis of the hydatidosis (author's transl)]. *Ann.Sclavo.* 1979. 21: 800-815.
302. Ismail,M.M., Bruce,J.I., Attia,M., Tayel,S.E., Sabah,A.A., and el Ahmedawy,B.E., The detection of IgE by radio allergosorbent technique (R.A.S.T.) and ELISA in Egyptian cases of schistosomiasis. *J Egypt.Soc.Parasitol.* 1989. 19: 29-34.
303. Smith,P.K., Krohn,R.I., Hermanson,G.T., Mallia,A.K., Gartner,F.H., Provenzano,M.D., Fujimoto,E.K., Goeke,N.M., Olson,B.J., and Klenk,D.C., Measurement of protein using bicinchoninic acid. *Anal.Biochem.* 1985. 150: 76-85.
304. Schuurman,J., Perdok,G.J., Lourens,T.E., Parren,P.W., Chapman,M.D., and Aalberse,R.C., Production of a mouse/human chimeric IgE monoclonal antibody to the house dust mite allergen Der p 2 and its use for the absolute quantification of allergen-specific IgE. *J.Allergy Clin.Immunol.* 1997. 99: 545-550.
305. Haarbrink,M., Terhell,A., Abadi,K., van Beers,S., Asri,M., and Yazdanbakhsh,M., IgG4 antibody assay in the detection of filariasis. *Lancet* 1995. 346: 853-854.
306. Ottesen,E.A., Skvaril,F., Tripathy,S.P., Poindexter,R.W., and Hussain,R., Prominence of IgG4 in the IgG antibody response to human filariasis. *J.Immunol.* 1985. 134: 2707-2712.
307. Kwan-Lim,G.E., Forsyth,K.P., and Maizels,R.M., Filarial-specific IgG4 response correlates with active Wuchereria bancrofti infection. *J.Immunol.* 1990. 145: 4298-4305.
308. Prescott,S.L., Macaubas,C., Smallacombe,T., Holt,B.J., Sly,P.D., and Holt,P.G., Development of allergen-specific T-cell memory in atopic and normal children. *Lancet.* 1999. 353: 196-200.

309. Jones,A.C., Miles,E.A., Warner,J.O., Colwell,B.M., Bryant,T.N., and Warner,J.A., Fetal peripheral blood mononuclear cell proliferative responses to mitogenic and allergenic stimuli during gestation. *Pediatr.Allergy Immunol.* 1996. 7: 109-116.
310. Malhotra,I., Ouma,J., Wamachi,A., Kioko,J., Mungai,P., Omollo,A., Elson,L., Koech,D., Kazura,J.W., and King,C.L., In utero exposure to helminth and mycobacterial antigens generates cytokine responses similar to that observed in adults. *J.Clin.Invest* 1997. 99: 1759-1766.
311. King,C.L., Malhotra,I., Mungai,P., Wamachi,A., Kioko,J., Ouma,J.H., and Kazura,J.W., B cell sensitization to helminthic infection develops in utero in humans. *J.Immunol.* 1998. 160: 3578-3584.
312. Weil,G.J., Hussain,R., Kumaraswami,V., Tripathy,S.P., Phillips,K.S., and Ottesen,E.A., Prenatal allergic sensitization to helminth antigens in offspring of parasite-infected mothers. *J.Clin.Invest* 1983. 71: 1124-1129.
313. Hattevig,G., Kjellman,B., and Bjorksten,B., Clinical symptoms and IgE responses to common food proteins and inhalants in the first 7 years of life. *Clin.Allergy.* 1987. 17: 571-578.
314. Slee,W.V., Onderzoek Naar Het Voorkomen Van Filaria Te Mamoedjoe. *Geneeskundig Tijdschrift van Nederlands-Indië* 1930. 70: 444-450.
315. Terhell,A.J., Haarbrink,M., Abadi,K., Bronneberg,D.C., Tieleman,M.C., Asri,M., and Yazdanbakhsh,M., A filter paper technique for the detection of anti-filarial IgG4 in lymphatic filariasis. *Trans.R.Soc.Trop.Med.Hyg.* 1996. 90: 196-198.
316. Terhell,A.J., Price,R., Koot,J.W., Abadi,K., and Yazdanbakhsh,M., The development of specific IgG4 and IgE in a paediatric population is influenced by filarial endemicity and gender. *Parasitology* 2000. 121 Pt 5:535-43.: 535-543.
317. Mahanty,S., Day,K.P., Alpers,M.P., and Kazura,J.W., Antifilarial IgG4 antibodies in children from filaria-endemic areas correlate with duration of infection and are dissociated from antifilarial IgE antibodies. *J.Infect.Dis.* 1994. 170: 1339-1343.
318. Bailey,J.W., Hightower,A.W., Eberhard,M.L., and Lammie,P.J., Acquisition and expression of humoral reactivity to antigens of infective stages of filarial larvae. *Parasite Immunol.* 1995. 17: 617-623.
319. Chanteau,S., Glaziou,P., Plichart,C., Luquiaud,P., Moulia-Pelat,J.P., N'Guyen,L., and Cartel,J.L., Wuchereria bancrofti filariasis in French Polynesia: age-specific patterns of microfilaremia, circulating antigen, and specific IgG and IgG4 responses according to transmission level. *Int J.Parasitol.* 1995. 25: 81-85.
320. Michael,E., Bundy,D.A., and Grenfell,B.T., Re-assessing the global prevalence and distribution of lymphatic filariasis. *Parasitology.* 1996. 112: 409-428.
321. Meyrowitsch,D.W., Simonsen,P.E., and Makunde,W.H., A 16-year follow-up study on bancroftian filariasis in three communities of north-eastern Tanzania. *Ann.Trop.Med.Parasitol.* 1995. 89: 665-675.
322. Hussain,R., Grogl,M., and Ottesen,E.A., IgG antibody subclasses in human filariasis. Differential subclass recognition of parasite antigens correlates with different clinical manifestations of infection. *J.Immunol.* 1987. 139: 2794-2798.
323. Eloi-Santos,S.M., Novato-Silva,E., Maselli,V.M., Gazzinelli,G., Colley,D.G., and Correa-Oliveira,R., Idiotypic sensitization in utero of children born to mothers with schistosomiasis or Chagas' disease. *J.Clin.Invest.* 1989. 84: 1028-1031.
324. Eberhard,M.L., Hitch,W.L., McNeeley,D.F., and Lammie,P.J., Transplacental transmission of Wuchereria bancrofti in Haitian women. *J.Parasitol.* 1993. 79: 62-66.
325. Fonticiella,M., Lopez-Negrete,L., Prieto,A., Garcia-Hernandez,J.B., Orense,M., Fernandez-Diego,J., and Gomez,J.L., Congenital intracranial filariasis: a case report. *Pediatr.Radiol.* 1995. 25: 171-172.
326. Avrech,O.M., Samra,Z., Lazarovich,Z., Caspi,E., Jacobovich,A., and Sompolinsky,D., Efficacy of the placental barrier for immunoglobulins: correlations between maternal, paternal and fetal immunoglobulin levels. *Int Arch.Allergy Immunol.* 1994. 103: 160-165.
327. Oxelius,V.A., IgG subclass levels in infancy and childhood. *Acta Paediatr.Scand.* 1979. 68: 23-27.
328. Underdown,B.J., Knight,A., and Papsin,F.R., The relative paucity of IgE in human milk. *J.Immunol.* 1976. 116: 1435-1438.
329. Turner,M.W., McClelland,D.B., Medlen,A.R., and Stokes,C.R., IGE in human urine and milk. *Scand.J.Immunol.* 1977. 6: 343-348.
330. Brown,W.R., Relationships between immunoglobulins and the intestinal epithelium. *Gastroenterology.* 1978. 75: 129-138.
331. Bahna,S.L., Keller,M.A., and Heiner,D.C., IgE and IgD in human colostrum and plasma. *Pediatr.Res.* 1982. 16: 604-607.
332. Duchen,K. and Bjorksten,B., Total IgE levels in human colostrum. *Pediatr.Allergy Immunol.* 1996. 7: 44-47.
333. Barreto,M.L., The dot map as an epidemiological tool: a case study of Schistosoma mansoni infection in an urban setting. *Int J.Epidemiol.* 1993. 22: 731-741.
334. Lindo,J.F., Robinson,R.D., Terry,S.I., Vogel,P., Gam,A.A., Neva,F.A., and Bundy,D.A., Age-prevalence and household clustering of Strongyloides stercoralis infection in Jamaica. *Parasitology.* 1995. 110: 97-102.
335. Johnson,C.C., Peterson,E.L., and Ownby,D.R., Gender differences in total and allergen-specific

immunoglobulin E (IgE) concentrations in a population-based cohort from birth to age four years. *Am.J.Epidemiol.* 1998. 147: 1145-1152.
336. WHO. Lymphatic filariasis. www.who.org . 2002. Ref Type: Electronic Citation
337. Choi,E.H., Zimmerman,P.A., Foster,C.B., Zhu,S., Kumaraswami,V., Nutman,T.B., and Chanock,S.J., Genetic polymorphisms in molecules of innate immunity and susceptibility to infection with Wuchereria bancrofti in South India. *Genes Immun.* 2001. 2: 248-253.
338. Lammie,P.J., Hitch,W.L., Walker Allen,E.M., Hightower,W., and Eberhard,M.L., Maternal filarial infection as risk factor for infection in children. *Lancet* 1991. 337: 1005-1006.
339. Houwing-Duistermaat,J.J., Van Houwelingen,H.C., and Terhell,A., Modelling the cause of dependency with application to filaria infection. *Stat.Med.* 1998. 17: 2939-2954.
340. Laird,N.M. and Ware,J.H., Random-effects models for longitudinal data. *Biometrics.* 1982. 38: 963-974.
341. Garcia,A., Abel,L., Cot,M., Richard,P., Ranque,S., Feingold,J., Demenais,F., Boussinesq,M., and Chippaux,J.P., Genetic epidemiology of host predisposition microfilaraemia in human loiasis. *Trop.Med.Int.Health.* 1999. 4: 565-574.
342. Yan,D.C., Ou,L.S., Tsai,T.L., Wu,W.F., and Huang,J.L., Prevalence and severity of symptoms of asthma, rhinitis, and eczema in 13- to 14-year-old children in Taipei, Taiwan. *Ann.Allergy Asthma Immunol.* 2005. 95: 579-585.
343. Selnes,A., Nystad,W., Bolle,R., and Lund,E., Diverging prevalence trends of atopic disorders in Norwegian children. Results from three cross-sectional studies. *Allergy.* 2005. 60: 894-899.
344. Roel,E., Faresjo,A., Zetterstrom,O., Trell,E., and Faresjo,T., Clinically diagnosed childhood asthma and follow-up of symptoms in a Swedish case control study. *BMC.Fam.Pract.* 2005. 6: 16.
345. Lis,G., Breborowicz,A., Cichocka-Jarosz,E., Sobkowiak,P., Gazurek,D., Swiatly,A., Alkiewicz,J., and Pietrzyk,J.J., [The prevalence of allergic rhinitis and conjunctivitis in school children from Krakow and Poznan—ISAAC study (International Study of Asthma and Allergies in Childhood)]. *Otolaryngol.Pol.* 2004. 58: 1103-1109.
346. Banac,S., Tomulic,K.L., Ahel,V., Rozmanic,V., Simundic,N., Zubovic,S., Milardovic,A., and Topic,J., Prevalence of asthma and allergic diseases in Croatian children is increasing: survey study. *Croat.Med.J.* 2004. 45: 721-726.
347. Hong,S.J., Lee,M.S., Sohn,M.H., Shim,J.Y., Han,Y.S., Park,K.S., Ahn,Y.M., Son,B.K., and Lee,H.B., Self-reported prevalence and risk factors of asthma among Korean adolescents: 5-year follow-up study, 1995-2000. *Clin.Exp.Allergy.* 2004. 34: 1556-1562.
348. Lee,S.L., Wong,W., and Lau,Y.L., Increasing prevalence of allergic rhinitis but not asthma among children in Hong Kong from 1995 to 2001 (Phase 3 International Study of Asthma and Allergies in Childhood). *Pediatr.Allergy Immunol.* 2004. 15: 72-78.
349. Maziak,W., Behrens,T., Brasky,T.M., Duhme,H., Rzehak,P., Weiland,S.K., and Keil,U., Are asthma and allergies in children and adolescents increasing? Results from ISAAC phase I and phase III surveys in Munster, Germany. *Allergy.* 2003. 58: 572-579.
350. Sudhir,P. and Prasad,C.E., Prevalence of exercise-induced bronchospasm in schoolchildren: an urban-rural comparison. *J.Trop.Pediatr.* 2003. 49: 104-108.
351. Perzanowski,M.S., Ng'ang'a,L.W., Carter,M.C., Odhiambo,J., Ngari,P., Vaughan,J.W., Chapman,M.D., Kennedy,M.W., and Platts-Mills,T.A., Atopy, asthma, and antibodies to Ascaris among rural and urban children in Kenya. *J.Pediatr.* 2002. 140: 582-588.
352. Eder,W., Klimecki,W., Yu,L., von Mutius,E., Riedler,J., Braun-Fahrlander,C., Nowak,D., and Martinez,F.D., Toll-like receptor 2 as a major gene for asthma in children of European farmers. *J.Allergy Clin.Immunol.* 2004. 113: 482-488.
353. Duhme,H., Weiland,S.K., Rudolph,P., Wienke,A., Kramer,A., and Keil,U., Asthma and allergies among children in West and East Germany: a comparison between Munster and Greifswald using the ISAAC phase I protocol. International Study of Asthma and Allergies in Childhood. *Eur.Respir.J.* 1998. 11: 840-847.
354. Pattemore,P.K., Ellison-Loschmann,L., Asher,M.I., Barry,D.M., Clayton,T.O., Crane,J., D'Souza,W.J., Ellwood,P., Ford,R.P., Mackay,R.J., Mitchell,E.A., Moyes,C., Pearce,N., and Stewart,A.W., Asthma prevalence in European, Maori, and Pacific children in New Zealand: ISAAC study. *Pediatr.Pulmonol.* 2004. 37: 433-442.
355. Ponsonby,A.L., Couper,D., Dwyer,T., Carmichael,A., and Wood-Baker,R., Exercise-induced bronchial hyperresponsiveness and parental ISAAC questionnaire responses. *Eur.Respir.J.* 1996. 9: 1356-1362.
356. Haby,M.M., Peat,J.K., Marks,G.B., Woolcock,A.J., and Leeder,S.R., Asthma in preschool children: prevalence and risk factors. *Thorax* 2001. 56: 589-595.
357. Montefort,S., Lenicker,H.M., Caruna,S., and Agius,M.H., Asthma, rhinitis and eczema in Maltese 13-15 year-old schoolchildren — prevalence, severity and associated factors [ISAAC]. International Study of Asthma and Allergies in Childhood. *Clin.Exp.Allergy* 1998. 28: 1089-1099.
358. Asher,M.I., Keil,U., Anderson,H.R., Beasley,R., Crane,J., Martinez,F., Mitchell,E.A., Pearce,N., Sibbald,B., Stewart,A.W., and ., International Study of Asthma and Allergies in Childhood (ISAAC): rationale and methods. *Eur.Respir.J.* 1995. 8: 483-491.
359. Weiland,S.K., Bjorksten,B., Brunekreef,B., Cookson,W.O., von Mutius,E., and Strachan,D.P., Phase

II of the International Study of Asthma and Allergies in Childhood (ISAAC II): rationale and methods. *Eur.Respir.J.* 2004. 24: 406-412.
360. Ellwood,P., Asher,M.I., Beasley,R., Clayton,T.O., and Stewart,A.W., The international study of asthma and allergies in childhood (ISAAC): phase three rationale and methods. *Int.J.Tuberc.Lung Dis.* 2005. 9: 10-16.
361. Chan,H.H., Pei,A., Van Krevel,C., Wong,G.W., and Lai,C.K., Validation of the Chinese translated version of ISAAC core questions for atopic eczema. *Clin.Exp.Allergy* 2001. 31: 903-907.
362. Dreborg,S.a.F.A., Allergen Standardization and Skin Test. EAACI Position Paper. *Allergy* 1993. 48(S14): 49-82.
363. Aalberse,R.C., Koshte,V., and Clemens,J.G., Immunoglobulin E antibodies that crossreact with vegetable foods, pollen, and Hymenoptera venom. *J.Allergy Clin.Immunol.* 1981. 68: 356-364.
364. Pearce,N., Pekkanen,J., and Beasley,R., How much asthma is really attributable to atopy? *Thorax* 1999. 54: 268-272.
365. Stewart,A.W., Mitchell,E.A., Pearce,N., Strachan,D.P., and Weilandon,S.K., The relationship of per capita gross national product to the prevalence of symptoms of asthma and other atopic diseases in children (ISAAC). *Int.J.Epidemiol.* 2001. 30: 173-179.
366. Poyser,M.A., Nelson,H., Ehrlich,R.I., Bateman,E.D., Parnell,S., Puterman,A., and Weinberg,E., Socioeconomic deprivation and asthma prevalence and severity in young adolescents. *Eur.Respir.J.* 2002. 19: 892-898.
367. Mercer,M.J., Joubert,G., Ehrlich,R.I., Nelson,H., Poyser,M.A., Puterman,A., and Weinberg,E.G., Socioeconomic status and prevalence of allergic rhinitis and atopic eczema symptoms in young adolescents. *Pediatr.Allergy Immunol.* 2004. 15: 234-241.
368. Jenkins,M.A., Clarke,J.R., Carlin,J.B., Robertson,C.F., Hopper,J.L., Dalton,M.F., Holst,D.P., Choi,K., and Giles,G.G., Validation of questionnaire and bronchial hyperresponsiveness against respiratory physician assessment in the diagnosis of asthma. *Int.J.Epidemiol.* 1996. 25: 609-616.
369. Braun-Fahrlander,C., Wuthrich,B., Gassner,M., Grize,L., Sennhauser,F.H., Varonier,H.S., and Vuille,J.C., Validation of a rhinitis symptom questionnaire (ISAAC core questions) in a population of Swiss school children visiting the school health services. SCARPOL-team. Swiss Study on Childhood Allergy and Respiratory Symptom with respect to Air Pollution and Climate. International Study of Asthma and Allergies in Childhood. *Pediatr.Allergy Immunol.* 1997. 8: 75-82.
370. Williams,H.C., Burney,P.G., Hay,R.J., Archer,C.B., Shipley,M.J., Hunter,J.J., Bingham,E.A., Finlay,A.Y., Pembroke,A.C., Graham-Brown,R.A., and ., The U.K. Working Party's Diagnostic Criteria for Atopic Dermatitis. I. Derivation of a minimum set of discriminators for atopic dermatitis. *Br.J.Dermatol.* 1994. 131: 383-396.
371. Popescu,C.M., Popescu,R., Williams,H., and Forsea,D., Community validation of the United Kingdom diagnostic criteria for atopic dermatitis in Romanian schoolchildren. *Br.J.Dermatol.* 1998. 138: 436-442.
372. Cashat-Cruz,M., Morales-Aguirre,J.J., and Mendoza-Azpiri,M., Respiratory tract infections in children in developing countries. *Semin.Pediatr.Infect.Dis.* 2005. 16: 84-92.
373. Simoes,E.A., Environmental and demographic risk factors for respiratory syncytial virus lower respiratory tract disease. *J.Pediatr.* 2003. 143: S118-S126.
374. Wong,C.M., Ma,S., Hedley,A.J., and Lam,T.H., Effect of air pollution on daily mortality in Hong Kong. *Environ.Health Perspect.* 2001. 109: 335-340.
375. Ogden,C.L., Kuczmarski,R.J., Flegal,K.M., Mei,Z., Guo,S., Wei,R., Grummer-Strawn,L.M., Curtin,L.R., Roche,A.F., and Johnson,C.L., Centers for Disease Control and Prevention 2000 growth charts for the United States: improvements to the 1977 National Center for Health Statistics version. *Pediatrics* 2002. 109: 45-60.
376. WHO, *Diagnostic techniques for intestinal parasitic infections (IPI) applicable to primary health care (PHC) services*. World Health Organizatiom, Geneva, Switzerland 1985.
377. Basagana,X., Sunyer,J., Kogevinas,M., Zock,J.P., Duran-Tauleria,E., Jarvis,D., Burney,P., and Anto,J.M., Socioeconomic status and asthma prevalence in young adults: the European Community Respiratory Health Survey. *Am.J.Epidemiol.* 2004. 160: 178-188.
378. Lindbaek,M., Wefring,K.W., Grangard,E.H., and Ovsthus,K., Socioeconomical conditions as risk factors for bronchial asthma in children aged 4-5 yrs. *Eur.Respir.J.* 2003. 21: 105-108.
379. da Costa,L.R., Victora,C.G., Menezes,A.M., and Barros,F.C., Do risk factors for childhood infections and malnutrition protect against asthma? A study of Brazilian male adolescents. *Am.J.Public Health.* 2003. 93: 1858-1864.
380. Hancox,R.J., Milne,B.J., Taylor,D.R., Greene,J.M., Cowan,J.O., Flannery,E.M., Herbison,G.P., McLachlan,C.R., Poulton,R., and Sears,M.R., Relationship between socioeconomic status and asthma: a longitudinal cohort study. *Thorax.* 2004. 59: 376-380.
381. Suarez-Varela,M.M., Gonzalez,A.L., and Martinez Selva,M.I., Socioeconomic risk factors in the prevalence of asthma and other atopic diseases in children 6 to 7 years old in Valencia Spain. *Eur.J.Epidemiol.* 1999. 15: 35-40.
382. Corvalan,C., Amigo,H., Bustos,P., and Rona,R.J., Socioeconomic risk factors for asthma in Chilean young adults. *Am.J.Public Health.* 2005. 95: 1375-1381.

383. Forastiere,F., Agabiti,N., Corbo,G.M., Dell'Orco,V., Porta,D., Pistelli,R., Levenstein,S., and Perucci,C.A., Socioeconomic status, number of siblings, and respiratory infections in early life as determinants of atopy in children. *Epidemiology.* 1997. 8: 566-570.
384. Strachan,D.P., Harkins,L.S., Johnston,I.D., and Anderson,H.R., Childhood antecedents of allergic sensitization in young British adults. *J.Allergy Clin.Immunol.* 1997. 99: 6-12.
385. Chandra,R.K., Nutritional regulation of immunity and risk of illness. *Indian J.Pediatr.* 1989. 56: 607-611.
386. Hagel,I., Lynch,N.R., Puccio,F., Rodriguez,O., Luzondo,R., Rodriguez,P., Sanchez,P., Cabrera,C.M., and Di Prisco,M.C., Defective regulation of the protective IgE response against intestinal helminth Ascaris lumbricoides in malnourished children. *J.Trop.Pediatr.* 2003. 49: 136-142.
387. Chinn,S., Obesity and asthma: evidence for and against a causal relation. *J.Asthma.* 2003. 40: 1-16.
388. Braback,L. and Hedberg,A., Perinatal risk factors for atopic disease in conscripts. *Clin.Exp.Allergy.* 1998. 28: 936-942.
389. Lewis,S., Richards,D., Bynner,J., Butler,N., and Britton,J., Prospective study of risk factors for early and persistent wheezing in childhood. *Eur.Respir.J.* 1995. 8: 349-356.
390. Davis,J.B. and Bulpitt,C.J., Atopy and wheeze in children according to parental atopy and family size. *Thorax.* 1981. 36: 185-189.
391. Karmaus,W., Arshad,H., and Mattes,J., Does the sibling effect have its origin in utero? Investigating birth order, cord blood immunoglobulin E concentration, and allergic sensitization at age 4 years. *Am.J.Epidemiol.* 2001. 154: 909-915.
392. Cook,D.G. and Strachan,D.P., Health effects of passive smoking. 3. Parental smoking and prevalence of respiratory symptoms and asthma in school age children. *Thorax.* 1997. 52: 1081-1094.
393. Agabiti,N., Mallone,S., Forastiere,F., Corbo,G.M., Ferro,S., Renzoni,E., Sestini,P., Rusconi,F., Ciccone,G., Viegi,G., Chellini,E., and Piffer,S., The impact of parental smoking on asthma and wheezing. SIDRIA Collaborative Group. Studi Italiani sui Disturbi Respiratori nell'Infanzia e l'Ambiente. *Epidemiology.* 1999. 10: 692-698.
394. Zeiger,R.S. and Heller,S., The development and prediction of atopy in high-risk children: follow-up at age seven years in a prospective randomized study of combined maternal and infant food allergen avoidance. *J.Allergy Clin.Immunol.* 1995. 95: 1179-1190.
395. Kramer,U., Lemmen,C.H., Behrendt,H., Link,E., Schafer,T., Gostomzyk,J., Scherer,G., and Ring,J., The effect of environmental tobacco smoke on eczema and allergic sensitization in children. *Br.J.Dermatol.* 2004. 150: 111-118.
396. Tariq,S.M., Hakim,E.A., Matthews,S.M., and Arshad,S.H., Influence of smoking on asthmatic symptoms and allergen sensitisation in early childhood. *Postgrad.Med.J.* 2000. 76: 694-699.
397. Oryszczyn,M.P., Annesi-Maesano,I., Charpin,D., and Kauffmann,F., Allergy markers in adults in relation to the timing of pet exposure: the EGEA study. *Allergy.* 2003. 58: 1136-1143.
398. Ronmark,E., Perzanowski,M., Platts-Mills,T., and Lundback,B., Four-year incidence of allergic sensitization among schoolchildren in a community where allergy to cat and dog dominates sensitization: report from the Obstructive Lung Disease in Northern Sweden Study Group. *J.Allergy Clin.Immunol.* 2003. 112: 747-754.
399. de Meer,G., Toelle,B.G., Ng,K., Tovey,E., and Marks,G.B., Presence and timing of cat ownership by age 18 and the effect on atopy and asthma at age 28. *J.Allergy Clin.Immunol.* 2004. 113: 433-438.
400. Roost,H.P., Kunzli,N., Schindler,C., Jarvis,D., Chinn,S., Perruchoud,A.P., Ackermann-Liebrich,U., Burney,P., and Wuthrich,B., Role of current and childhood exposure to cat and atopic sensitization. European Community Respiratory Health Survey. *J.Allergy Clin.Immunol.* 1999. 104: 941-947.
401. Sporik,R., Squillace,S.P., Ingram,J.M., Rakes,G., Honsinger,R.W., and Platts-Mills,T.A., Mite, cat, and cockroach exposure, allergen sensitisation, and asthma in children: a case-control study of three schools. *Thorax.* 1999. 54: 675-680.
402. Becker,A., Watson,W., Ferguson,A., Dimich-Ward,H., and Chan-Yeung,M., The Canadian asthma primary prevention study: outcomes at 2 years of age. *J.Allergy Clin.Immunol.* 2004. 113: 650-656.
403. Hagel,I., Lynch,N.R., Perez,M., Di Prisco,M.C., Lopez,R., and Rojas,E., Modulation of the allergic reactivity of slum children by helminthic infection. *Parasite Immunol.* 1993. 15: 311-315.
404. Teeratakulpisarn,J., Pairojkul,S., and Heng,S., Survey of the prevalence of asthma, allergic rhinitis and eczema in schoolchildren from Khon Kaen, Northeast Thailand. an ISAAC study. International Study of Asthma and Allergies in Childhood. *Asian Pac.J.Allergy Immunol.* 2000. 18: 187-194.
405. Weiss,S.T., Gene by environment interaction and asthma. *Clin.Exp.Allergy.* 1999. 29 Suppl 2:96-9.: 96-99.
406. Martinez,F.D., Gene by environment interactions in the development of asthma. *Clin.Exp.Allergy.* 1998. 28 Suppl 5:21-5; discussion 26-8.: 21-25.
407. Xu,J., Postma,D.S., Howard,T.D., Koppelman,G.H., Zheng,S.L., Stine,O.C., Bleecker,E.R., and Meyers,D.A., Major genes regulating total serum immunoglobulin E levels in families with asthma. *Am.J.Hum.Genet.* 2000. 67: 1163-1173.
408. Liu,X., Beaty,T.H., Deindl,P., Huang,S.K., Lau,S., Sommerfeld,C., Fallin,M.D., Kao,W.H., Wahn,U., and Nickel,R., Associations between specific serum IgE response and 6 variants within the genes IL4, IL13, and IL4RA in German children: the German Multicenter Atopy Study. *J.Allergy Clin.Immunol.* 2004. 113: 489-495.

409. Karihaloo,C., Tovey,E.R., Mitakakis,T.Z., Duffy,D.L., and Britton,W.J., Evidence for the genetic control of immunoglobulin E reactivity to the allergens of Alternaria alternata. *Clin.Exp.Allergy.* 2002. 32: 1316-1322.
410. Koppelman,G.H., Stine,O.C., Xu,J., Howard,T.D., Zheng,S.L., Kauffman,H.F., Bleecker,E.R., Meyers,D.A., and Postma,D.S., Genome-wide search for atopy susceptibility genes in Dutch families with asthma. *J.Allergy Clin.Immunol.* 2002. 109: 498-506.
411. Fryer,A.A., Bianco,A., Hepple,M., Jones,P.W., Strange,R.C., and Spiteri,M.A., Polymorphism at the glutathione S-transferase GSTP1 locus. A new marker for bronchial hyperresponsiveness and asthma. *Am.J.Respir.Crit Care Med.* 2000. 161: 1437-1442.
412. Ulbrecht,M., Hergeth,M.T., Wjst,M., Heinrich,J., Bickeboller,H., Wichmann,H.E., and Weiss,E.H., Association of beta(2)-adrenoreceptor variants with bronchial hyperresponsiveness. *Am.J.Respir.Crit Care Med.* 2000. 161: 469-474.
413. Matricardi,P.M., Rosmini,F., Ferrigno,L., Nisini,R., Rapicetta,M., Chionne,P., Stroffolini,T., Pasquini,P., and D'Amelio,R., Cross sectional retrospective study of prevalence of atopy among Italian military students with antibodies against hepatitis A virus. *BMJ.* 1997. 314: 999-1003.
414. Wilson,M.S. and Maizels,R.M., Regulation of allergy and autoimmunity in helminth infection. *Clin.Rev.Allergy Immunol.* 2004. 26: 35-50.
415. Wahyuni,S., Sartono,E., Supali,T., van der Zee,J.S., Mangali,A., Van Ree,R., Houwing-Duistermaat,J.J., and Yazdanbakhsh,M., Clustering of allergic outcomes within families and households in areas endemic for helminth infections. *Int.Arch.Allergy Immunol.* 2005. 136: 356-364.
416. Oryszczyn,M.P., Annesi,I., Neukirch,F., Dore,M.F., and Kauffmann,F., Relationships of total IgE level, skin prick test response, and smoking habits. *Ann.Allergy.* 1991. 67: 355-358.
417. Suliaman,F.A., Holmes,W.F., Kwick,S., Khouri,F., and Ratard,R., Pattern of immediate type hypersensitivity reactions in the Eastern Province, Saudi Arabia. *Ann.Allergy Asthma Immunol.* 1997. 78: 415-418.
418. Saracevic,E., Omercahic-Dizdarevic,A., and Hasanbegovic,S., [Allergy tests in children with seasonal allergic rhinitis]. *Med.Arh.* 2002. 56: 23-25.
419. Wamae,C.N., Roberts,J.M., Eberhard,M.L., and Lammie,P.J., Kinetics of circulating human IgG4 after diethylcarbamazine and ivermectin treatment of bancroftian filariasis. *J.Infect.Dis.* 1992. 165: 1158-1160.
420. Terhell,A.J., Haarbrink,M., van den,B.A., Mangali,A., Sartono,E., and Yazdanbakhsh,M., Long-term follow-up of treatment with diethylcarbamazine on anti-filarial IgG4: dosage, compliance, and differential patterns in adults and children. *Am.J.Trop.Med.Hyg.* 2003. 68: 33-39.
421. Polderman,A.M. and Verweij,J.J., Recente ontwikkelingen in de diagnostiek van parasitaire infecties. *Importziekten (J.W. van't Wout ed.)*. 1995, pp 145-151.
422. Wahyuni,S., Houwing-Duistermaat,J.J., Syafruddin, Supali,T., Yazdanbakhsh,M., and Sartono,E., Clustering of filarial infection in an age-graded study: genetic, household and environmental influences. *Parasitology* 2004. 128: 315-321.
423. Shaheen,S.O., Aaby,P., Hall,A.J., Barker,D.J., Heyes,C.B., Shiell,A.W., and Goudiaby,A., Measles and atopy in Guinea-Bissau. *Lancet.* 1996. 347: 1792-1796.
424. Akerman,M., Valentine-Maher,S., Rao,M., Taningco,G., Khan,R., Tuysugoglu,G., and Joks,R., Allergen sensitivity and asthma severity at an inner city asthma center. *J.Asthma.* 2003. 40: 55-62.
425. Kerkhof,M., Droste,J.H., de Monchy,J.G., Schouten,J.P., and Rijcken,B., Distribution of total serum IgE and specific IgE to common aeroallergens by sex and age, and their relationship to each other in a random sample of the Dutch general population aged 20-70 years. Dutch ECRHS Group, European Community Respiratory Health Study. *Allergy.* 1996. 51: 770-776.
426. Court CS, Cook,D.G., and Strachan,D.P., The descriptive epidemiology of house dust mite-specific and total immunoglobin E in England using a nationally representative sample. *Clin.Exp.Allergy.* 2002. 32: 1033-1041.
427. Jedrychowski,W., Flak,E., Mroz,E., and Lis,G., [Sensitization to common airborne allergens in school children with bronchial asthma]. *Przegl.Lek.* 2000. 57: 441-445.
428. Eriksson,N.E. and Holmen,A., Skin prick tests with standardized extracts of inhalant allergens in 7099 adult patients with asthma or rhinitis: cross-sensitizations and relationships to age, sex, month of birth and year of testing. *J.Investig.Allergol.Clin.Immunol.* 1996. 6: 36-46.
429. van den Biggelaar,A.H., Grogan,J.L., Filie,Y., Jordens,R., Kremsner,P.G., Koning,F., and Yazdanbakhsh,M., Chronic schistosomiasis: dendritic cells generated from patients can overcome antigen-specific T cell hyporesponsiveness. *J.Infect.Dis.* 2000. 182: 260-265.
430. Santiago,M.L., Hafalla,J.C., Kurtis,J.D., Aligui,G.L., Wiest,P.M., Olveda,R.M., Olds,G.R., Dunne,D.W., and Ramirez,B.L., Identification of the Schistosoma japonicum 22.6-kDa antigen as a major target of the human IgE response: similarity of IgE-binding epitopes to allergen peptides. *Int.Arch.Allergy Immunol.* 1998. 117: 94-104.
431. Schuetze,G., Storm van's,G.K., Sparhold,S., Frischer,T., and Kuehr,J., Comparison between serial skin-prick tests and specific serum immunoglobulin E to mite allergens. *Pediatr.Allergy Immunol.* 1999. 10: 138-142.
432. Lynch,N.R., Goldblatt,J., and Le Souef,P.N., Parasite infections and the risk of asthma and atopy.

Thorax. 1999. 54: 659-660.
433. King,C.L., Medhat,A., Malhotra,I., Nafeh,M., Helmy,A., Khaudary,J., Ibrahim,S., El Sherbiny,M., Zaky,S., Stupi,R.J., Brustoski,K., Shehata,M., and Shata,M.T., Cytokine control of parasite-specific anergy in human urinary schistosomiasis. IL-10 modulates lymphocyte reactivity. *J.Immunol.* 1996. 156: 4715-4721.
434. Doetze,A., Satoguina,J., Burchard,G., Rau,T., Loliger,C., Fleischer,B., and Hoerauf,A., Antigen-specific cellular hyporesponsiveness in a chronic human helminth infection is mediated by T(h)3/T(r)1-type cytokines IL-10 and transforming growth factor-beta but not by a T(h)1 to T(h)2 shift. *Int.Immunol.* 2000. 12: 623-630.
435. Mahanty,S. and Nutman,T.B., Immunoregulation in human lymphatic filariasis: the role of interleukin 10. *Parasite Immunol.* 1995. 17: 385-392.
436. Cooper,P.J., Guderian,R.H., Nutman,T.B., and Taylor,D.W., Human infection with Onchocerca volvulus does not affect the T helper cell phenotype of the cellular immune response to mycobacterial antigen. *Trans.R.Soc.Trop.Med.Hyg.* 1997. 91: 350-352.
437. Zaccone,P., Fehervari,Z., Jones,F.M., Sidobre,S., Kronenberg,M., Dunne,D.W., and Cooke,A., Schistosoma mansoni antigens modulate the activity of the innate immune response and prevent onset of type 1 diabetes. *Eur.J.Immunol.* 2003. 33: 1439-1449.
438. Brady,M.T., O'Neill,S.M., Dalton,J.P., and Mills,K.H., Fasciola hepatica suppresses a protective Th1 response against Bordetella pertussis. *Infect.Immun.* 1999. 67: 5372-5378.
439. Fox,J.G., Beck,P., Dangler,C.A., Whary,M.T., Wang,T.C., Shi,H.N., and Nagler-Anderson,C., Concurrent enteric helminth infection modulates inflammation and gastric immune responses and reduces helicobacter-induced gastric atrophy. *Nat.Med.* 2000. 6: 536-542.
440. Mills,K.H., Regulatory T cells: friend or foe in immunity to infection? *Nat.Rev.Immunol.* 2004. 4: 841-855.
441. WHO, *Basic laboratory methods in medical parasitology*. World health organization, Geneva 1991.
442. Langezaal,I., Coecke,S., and Hartung,T., Whole blood cytokine response as a measure of immunotoxicity. *Toxicol.In Vitro* 2001. 15: 313-318.
443. Smith,R.L., Chong,T.W., Hughes,M.G., Hedrick,T.L., Evans,H.L., McElearney,S.T., Saalwachter,A.R., Raymond,D.P., Du,K., Rudy,C.K., Pruett,T.L., and Sawyer,R.G., Impact of immunomodulatory oligodeoxynucleotides on cytokine production in the lipopolysaccharide-stimulated human whole blood model. *Surgery* 2004. 136: 464-472.
444. Takeda,K. and Akira,S., Toll receptors and pathogen resistance. *Cell Microbiol.* 2003. 5: 143-153.
445. Kadowaki,N., Ho,S., Antonenko,S., Malefyt,R.W., Kastelein,R.A., Bazan,F., and Liu,Y.J., Subsets of human dendritic cell precursors express different toll-like receptors and respond to different microbial antigens. *J.Exp.Med.* 2001. 194: 863-869.
446. Levy,O., Zarember,K.A., Roy,R.M., Cywes,C., Godowski,P.J., and Wessels,M.R., Selective impairment of TLR-mediated innate immunity in human newborns: neonatal blood plasma reduces monocyte TNF-alpha induction by bacterial lipopeptides, lipopolysaccharide, and imiquimod, but preserves the response to R-848. *J.Immunol.* 2004. 173: 4627-4634.
447. Hornung,V., Rothenfusser,S., Britsch,S., Krug,A., Jahrsdorfer,B., Giese,T., Endres,S., and Hartmann,G., Quantitative expression of toll-like receptor 1-10 mRNA in cellular subsets of human peripheral blood mononuclear cells and sensitivity to CpG oligodeoxynucleotides. *J.Immunol.* 2002. 168: 4531-4537.
448. Hayashi,F., Means,T.K., and Luster,A.D., Toll-like receptors stimulate human neutrophil function. *Blood* 2003. 102: 2660-2669.
449. Nagase,H., Okugawa,S., Ota,Y., Yamaguchi,M., Tomizawa,H., Matsushima,K., Ohta,K., Yamamoto,K., and Hirai,K., Expression and function of Toll-like receptors in eosinophils: activation by Toll-like receptor 7 ligand. *J.Immunol.* 2003. 171: 3977-3982.
450. Pearce,E.J., Kane,M., Sun,J., Taylor,J., McKee,A.S., and Cervi,L., Th2 response polarization during infection with the helminth parasite Schistosoma mansoni. *Immunol.Rev.* 2004. 201:117-26.: 117-126.
451. Hesse,M., Piccirillo,C.A., Belkaid,Y., Prufer,J., Mentink-Kane,M., Leusink,M., Cheever,A.W., Shevach,E.M., and Wynn,T.A., The pathogenesis of schistosomiasis is controlled by cooperating IL-10-producing innate effector and regulatory T cells. *J.Immunol.* 2004. 172: 3157-3166.
452. Jacobs,W., Deelder,A., Bogers,J., Van,d., V, and Van Marck,E., Schistosomal granuloma modulation. III. Schistosma haematobium worms accelerate S. mansoni soluble egg antigen-induced hepatic granuloma formation in vivo. *Parasitol.Res.* 1999. 85: 905-909.
453. van der,K.D., Latz,E., Brouwers,J.F., Kruize,Y.C., Schmitz,M., Kurt-Jones,E.A., Espevik,T., de Jong,E.C., Kapsenberg,M.L., Golenbock,D.T., Tielens,A.G., and Yazdanbakhsh,M., A novel host-parasite lipid cross-talk. Schistosomal lyso-phosphatidylserine activates toll-like receptor 2 and affects immune polarization. *J.Biol.Chem.* 2002. 277: 48122-48129.
454. Wills-Karp,M., Immunologic basis of antigen-induced airway hyperresponsiveness. *Annu.Rev.Immunol.* 1999. 17:255-81.: 255-281.
455. Romagnani,S., Cytokines and chemoattractants in allergic inflammation. *Mol.Immunol.* 2002. 38: 881-885.
456. Wardlaw,A.J., Brightling,C., Green,R., Woltmann,G., and Pavord,I., Eosinophils in asthma and other allergic diseases. *Br.Med.Bull.* 2000. 56: 985-1003.

457. Brightling,C.E., Bradding,P., Symon,F.A., Holgate,S.T., Wardlaw,A.J., and Pavord,I.D., Mast-cell infiltration of airway smooth muscle in asthma. *N.Engl.J.Med.* 2002. 346: 1699-1705.
458. Nicolai,T. and von Mutius,E., Respiratory hypersensitivity and environmental factors: East and West Germany. *Toxicol.Lett.* 1996. 86: 105-113.
459. Nel,A.E., Diaz-Sanchez,D., and Li,N., The role of particulate pollutants in pulmonary inflammation and asthma: evidence for the involvement of organic chemicals and oxidative stress. *Curr.Opin.Pulm.Med.* 2001. 7: 20-26.
460. Gavett,S.H. and Koren,H.S., The role of particulate matter in exacerbation of atopic asthma. *Int.Arch.Allergy Immunol.* 2001. 124: 109-112.
461. Steerenberg,P.A., Withagen,C.E., van Dalen,W.J., Dormans,J.A., and van Loveren,H., Adjuvant activity of ambient particulate matter in macrophage activity-suppressed, N-acetylcysteine-treated, iNOS- and IL-4-deficient mice. *Inhal.Toxicol.* 2004. 16: 835-843.
462. Oddy,W.H., A review of the effects of breastfeeding on respiratory infections, atopy, and childhood asthma. *J.Asthma* 2004. 41: 605-621.
463. Mihrshahi,S., Peat,J.K., Webb,K., Oddy,W., Marks,G.B., and Mellis,C.M., Effect of omega-3 fatty acid concentrations in plasma on symptoms of asthma at 18 months of age. *Pediatr.Allergy Immunol.* 2004. 15: 517-522.
464. Sampson,H.A., Update on food allergy. *J.Allergy Clin.Immunol.* 2004. 113: 805-819.
465. Wong,G.W., Ko,F.W., Hui,D.S., Fok,T.F., Carr,D., von Mutius,E., Zhong,N.S., Chen,Y.Z., and Lai,C.K., Factors associated with difference in prevalence of asthma in children from three cities in China: multicentre epidemiological survey. *BMJ* 2004. 329: 486.
466. Dowse,G.K., Turner,K.J., Stewart,G.A., Alpers,M.P., and Woolcock,A.J., The association between Dermatophagoides mites and the increasing prevalence of asthma in village communities within the Papua New Guinea highlands. *J.Allergy Clin.Immunol.* 1985. 75: 75-83.
467. Addo Yobo,E.O., Custovic,A., Taggart,S.C., Asafo-Agyei,A.P., and Woodcock,A., Exercise induced bronchospasm in Ghana: differences in prevalence between urban and rural schoolchildren. *Thorax* 1997. 52: 161-165.
468. Yemaneberhan,H., Flohr,C., Lewis,S.A., Bekele,Z., Parry,E., Williams,H.C., Britton,J., and Venn,A., Prevalence and associated factors of atopic dermatitis symptoms in rural and urban Ethiopia. *Clin.Exp.Allergy* 2004. 34: 779-785.
469. Braun-Fahrlander,C., Riedler,J., Herz,U., Eder,W., Waser,M., Grize,L., Maisch,S., Carr,D., Gerlach,F., Bufe,A., Lauener,R.P., Schierl,R., Renz,H., Nowak,D., and von Mutius,E., Environmental exposure to endotoxin and its relation to asthma in school-age children. *N.Engl.J.Med.* 2002. %19;347: 869-877.
470. Platts-Mills,T.A., How environment affects patients with allergic disease: indoor allergens and asthma. *Ann.Allergy* 1994. 72: 381-384.
471. Krause,T., Koch,A., Friborg,J., Poulsen,L.K., Kristensen,B., and Melbye,M., Frequency of atopy in the Arctic in 1987 and 1998. *Lancet* 2002. 360: 691-692.
472. Chatkin,M.N., Menezes,A.M., Victora,C.G., and Barros,F.C., High prevalence of asthma in preschool children in Southern Brazil: a population-based study. *Pediatr.Pulmonol.* 2003. 35: 296-301.
473. Mallol,J., Sole,D., Asher,I., Clayton,T., Stein,R., and Soto-Quiroz,M., Prevalence of asthma symptoms in Latin America: the International Study of Asthma and Allergies in Childhood (ISAAC). *Pediatr.Pulmonol.* 2000. 30: 439-444.
474. Hightower,A.W., Lammie,P.J., and Eberhard,M.L., Maternal filarial infection - a persistent risk factor for microfilaremia in offspring? *Parasitol.Today* 1993. 9: 418-421.
475. Steinman,H.A., Donson,H., Kawalski,M., Toerien,A., and Potter,P.C., Bronchial hyper-responsiveness and atopy in urban, peri-urban and rural South African children. *Pediatr.Allergy Immunol.* 2003. 14: 383-393.
476. Yazdanbakhsh,M., van den,B.A., and Maizels,R.M., Th2 responses without atopy: immunoregulation in chronic helminth infections and reduced allergic disease. *Trends Immunol.* 2001. 22: 372-377.
477. Lynch,N.R., Hagel,I.A., Palenque,M.E., Di Prisco,M.C., Escudero,J.E., Corao,L.A., Sandia,J.A., Ferreira,L.J., Botto,C., Perez,M., and Le Souef,P.N., Relationship between helminthic infection and IgE response in atopic and nonatopic children in a tropical environment. *J.Allergy Clin.Immunol.* 1998. 101: 217-221.
478. Cooper,P.J., Chico,M.E., Vaca,M.G., Moncayo,A.L., Bland,J.M., Mafla,E., Sanchez,F., Rodrigues,L.C., Strachan,D.P., and Griffin,G.E., Effect of albendazole treatments on the prevalence of atopy in children living in communities endemic for geohelminth parasites: a cluster-randomised trial. *Lancet.* 2006. 367: 1598-1603.
479. Bashir,M.E., Andersen,P., Fuss,I.J., Shi,H.N., and Nagler-Anderson,C., An enteric helminth infection protects against an allergic response to dietary antigen. *J.Immunol.* 2002. 169: 3284-3292.
480. Wohlleben,G., Trujillo,C., Muller,J., Ritze,Y., Grunewald,S., Tatsch,U., and Erb,K.J., Helminth infection modulates the development of allergen-induced airway inflammation. *Int.Immunol.* 2004. 16: 585-596.
481. Yamamoto,M., Takeda,K., and Akira,S., TIR domain-containing adaptors define the specificity of TLR signaling. *Mol.Immunol.* 2004. 40: 861-868.