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(54) **CRYSTAL STRUCTURE OF HUMAN CORONAVIRUS 229E MAIN PROTEINASE, AND USES THEREOF FOR DEVELOPING SARS INHIBITORS**

KRISTALLSTRUKTUR VON DER HUMANEN CORONAVIRUS 229E HAUPTPROTEINASE UND DEREN VERWENDUNG ZUR ENTWICKLUNG VON SARS-INHIBITOREN

STRUCTURE CRISTALLINE DE LA PROTEINASE PRINCIPALE 229E DES CORONAVIRUS HUMAINS ET UTILISATIONS DE CETTE DERNIERE POUR DEVELOPPER DES INHIBITEURS DU SRAS

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(56) References cited:
• **ANAND KANCHAN ET AL: "Structure of coronavirus main proteinase reveals combination of a chymotrypsin fold with an extra alpha-helical domain" EMBO (EUROPEAN MOLECULAR BIOLOGY ORGANIZATION) JOURNAL, vol. 21, no. 13, 1 July 2002 (2002-07-01), pages 3213-3224, XP002299685 ISSN: 0261-4189**
• **ANAND KANCHAN ET AL: "Coronavirus main proteinase (3CLpro) structure: Basis for design of anti-SARS drugs" SCIENCE, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,, US, vol. 300, no. 5626, 13 June 2003 (2003-06-13), pages 1763-1767, XP002291115 ISSN: 0036-8075**
• **CHOU K-C ET AL: "Binding mechanism of coronavirus main proteinase with ligands and its implication to drug design against SARS" BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS, ACADEMIC PRESS INC. ORLANDO, FL, US, vol. 308, no. 1, 15 August 2003 (2003-08-15), pages 148-151, XP004441432 ISSN: 0006-291X**
• **XUE WU ZHANG ET AL: "EXPLORING THE BINDING MECHANISM OF THE MAIN PROTEINASE IN SARS-ASSOCIATED CORONAVIRUS AND ITS IMPLICATION TO ANTI-SARS DRUG DESIGN" BIOORGANIC & MEDICINAL CHEMISTRY, ELSEVIER SCIENCE LTD, GB, vol. 12, no. 9, 1 May 2004 (2004-05-01), pages 2219-2223, XP001202604 ISSN: 0968-0896**

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