Cloning of IFNγ and IL-4 in zoo animals and an approach to determine expression levels of these cytokines by real-time PCR
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Dritter Gutachter: Univ.-Prof. Dr. Dr. Hafez M. Hafez

Deskriptoren (nach CAB Thesaurus):
Cytokines, Interferon Type II, Interleukins, Interleukin-4, messenger RNA, DNA-cloning, Th1 cells (MeSH), Th2 cells (MeSH), Alternative Splicing (MeSH), Gene Expression, Zoo Animals, Animal models, Equidae, Horses, Phylogeny, Pylogenetics, Cell-mediated Immunity, Humoral Immunity, Polymerase Chain Reaction, Flow Cytometry, Antigens, CD3, Mycobacterium tuberculosis, Herpesviruses, Equid herpesvirus-1, RNA, Ribosomal, 18S (MeSH), Tetanus Toxoid, Antigens, CD28

Tag der Promotion: 01-10-2007
For who gave me life, love, help, encouragement and provides care

Allah

Then also to

my beloved Parents, Siblings, Arwa, Aya,

Sherif, Grandparents and Friends
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<th>Full Form</th>
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<tbody>
<tr>
<td>aa</td>
<td>amino acid</td>
</tr>
<tr>
<td>Ab</td>
<td>antibody</td>
</tr>
<tr>
<td>Ag</td>
<td>Antigen</td>
</tr>
<tr>
<td>APCs</td>
<td>Antigen Presenting Cells</td>
</tr>
<tr>
<td>BCG</td>
<td>Bacillus Calmette Guerin</td>
</tr>
<tr>
<td>BLAST</td>
<td>Basic Local Alignment Search Tool</td>
</tr>
<tr>
<td>bp</td>
<td>base pairs</td>
</tr>
<tr>
<td>BSA</td>
<td>Bovine serum albumin</td>
</tr>
<tr>
<td>CD</td>
<td>Cluster of differentiation</td>
</tr>
<tr>
<td>CMI</td>
<td>Cell Mediated Immunity</td>
</tr>
<tr>
<td>C&lt;sub&gt;t&lt;/sub&gt;</td>
<td>Threshold cycle</td>
</tr>
<tr>
<td>DABCYL</td>
<td>(4'-dimethylamino-phenylazo)-benzene</td>
</tr>
<tr>
<td>DC</td>
<td>Dendritic cell</td>
</tr>
<tr>
<td>DMSO</td>
<td>Dimethyl sulfoxide</td>
</tr>
<tr>
<td>DNA</td>
<td>Deoxyribonucleic acid</td>
</tr>
<tr>
<td>cDNA</td>
<td>complementary Deoxyribonucleic acid</td>
</tr>
<tr>
<td>dNTPs</td>
<td>Deoxyribonucleoside triphosphate</td>
</tr>
<tr>
<td>DOC</td>
<td>Deoxycholate</td>
</tr>
<tr>
<td>dR</td>
<td>Baseline-corrected raw fluorescence</td>
</tr>
<tr>
<td>dRn</td>
<td>Baseline-corrected normalized fluorescence</td>
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<tr>
<td>E.coli</td>
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<tr>
<td>EDTA</td>
<td>Ethylene Diamine Tetra Acetic acid</td>
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<tr>
<td>EHV-1</td>
<td>Equine herpesvirus-1</td>
</tr>
<tr>
<td>ELISA</td>
<td>Enzyme linked immunosorbent assay</td>
</tr>
<tr>
<td>FACS</td>
<td>Fluorescence-activated cell sorter</td>
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<tr>
<td>FAM</td>
<td>6-carboxyfluoresceine</td>
</tr>
<tr>
<td>FCS</td>
<td>Fetal calf serum</td>
</tr>
<tr>
<td>FITC</td>
<td>Fluorescein isothiocyanate</td>
</tr>
<tr>
<td>FRET</td>
<td>Fluorescence resonance energy transfer</td>
</tr>
<tr>
<td>H&lt;sub&gt;2&lt;/sub&gt;O</td>
<td>Water</td>
</tr>
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<td>H&lt;sub&gt;2&lt;/sub&gt;O&lt;sub&gt;2&lt;/sub&gt;</td>
<td>Hydrogen peroxidase</td>
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<td>d.H&lt;sub&gt;2&lt;/sub&gt;O</td>
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<td>4, (2-hydroxyethyl)-1-piperazine-1-ethanesulfonic acid</td>
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<td>HEX</td>
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<tr>
<td>ICAM-1</td>
<td>Intracellular adhesion molecule-1</td>
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<tr>
<td>IFN</td>
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<tr>
<td>IFN&lt;sub&gt;α&lt;/sub&gt;</td>
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<tr>
<td>Ig</td>
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<td>IL</td>
<td>Interleukin</td>
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<td>IL-4&lt;sub&gt;62&lt;/sub&gt;</td>
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<tr>
<td>iNOS</td>
<td>inducible Nitric Oxide Synthase</td>
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<tr>
<td>IPTG</td>
<td>Isopropyl-β-D-Thiogalactopyranoside</td>
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<tr>
<td>JAK</td>
<td>Janus Tyrosine Kinase</td>
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<tr>
<td>JOE</td>
<td>2,7 dimethoxy-4,5-dichloro-6-carboxyfluoresceine</td>
</tr>
<tr>
<td>kDa</td>
<td>kilo Daltons</td>
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<tr>
<td>KO</td>
<td>Knockout</td>
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<tr>
<td>LPS</td>
<td>Lipopolysaccharide</td>
</tr>
<tr>
<td>μ</td>
<td>micro</td>
</tr>
<tr>
<td>μM</td>
<td>micromole</td>
</tr>
<tr>
<td>M</td>
<td>Mole per litre</td>
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<tr>
<td>Mø</td>
<td>Macrophage</td>
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</table>
mAb Monoclonal antibody
*M. bovis* Mycobacterium bovis
MGB Minor groove binder
MHC Major Histocompatibility Complex
min minute
Mix mixture
ml millilitre
M-MLV Moloney Murine Leukemia Virus
mRNA messenger RNA
*M. tuberculosis* Mycobacterium tuberculosis
NFQ Non-fluorescent quencher
NK cells Natural killer cells
nm nanometer
OD Optical density
ORF Open Reading Frame
p pico
PAGE Poly Acrylamide Gel Electrophoresis
PBL Peripheral blood lymphocytes
PBMC Peripheral blood mononuclear cells
PBS Phosphate buffered saline
PCR Polymerase Chain Reaction
PE phycoerythrin
PFU Plaque Forming Units
PKC Protein Kinase C
PMA Phorbol-12-Myristate-13-Acetate
PPD Purified protein derivative
R Receptor
Rec. EqIL-4 Recombinant equine interleukin-4
RFU Relative fluorescent units
RNA Ribonucleic acid
18S rRNA 18S subunit ribosomal RNA
RNase Ribonuclease
ROI Reactive Oxygen Intermediates
ROX 6-carboxy-N,N,N,N-tetramethylrhodamine
rpm round per minute
RT Reverse transcription
SDS Sodium Dodecyl Sulphate
TAE Tris acetate EDTA
TAMRA carboxytetramethylrhodamine
TB Tuberculosis (disease)
TBS Tris buffered saline
Tc cytotoxic T cell
TCA Trichloroacetic acid
TCR T cell receptors
TEMED Tetramethylethylenediamin
TET Tetrachloro-6-carboxyfluorescine
TfB Transformation buffer
Th T helper cell
TLR Toll like receptor
Tm melting temperature
TNF-α Tumour Necrosis Factor-alpha
TT Tetanus toxoid
U Unit
UV Ultraviolet light
X-Gal 5-bromo-4-chloro-3-indolyl-b-D-galactopyranoside