

# DNA IMMUNIZATION FOR ANTIBODY PRODUCTION

## *Fields of Application /*

- Detection of your protein of interest in various assay formats (ELISA, WB, IP, IFA, FACS)
- Development of diagnostic assay systems
- Antibody based drugs and vaccines

## *The Problem /*

One of the most important tools in research, diagnostics and protein based drug development are antibodies that allow the identification and the analysis of polypeptide functions and the underlying regulatory mechanisms. However, the production of antibodies is frequently limited by time consuming, and thus expensive, immunization protocols depending on purified protein or by disadvantageous protein properties such as instability, toxicity, low antigenicity or immune tolerance.

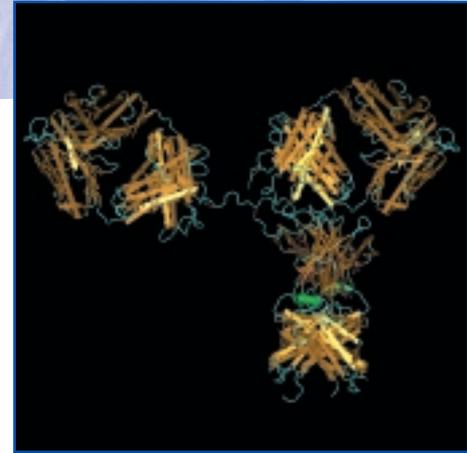
**GENEART** offers a **fast and reliable** plasmid **DNA based alternative for antibody production** in rabbits, mice, rats and chickens.

## *The Technical Solution /*

DNA immunization leads to correct post-translational modifications of the antigen in transduced cells. This supports the presentation of native protein structures that promote the production of antibodies **even against conformation dependent epitopes**. In addition, antisera generated by genetic immunization often reveal a **higher affinity and specificity** to your antigen compared to antisera raised against the corresponding recombinant proteins. This is primarily due to the complete lack of contaminating proteins in the immunogen preparation, facilitating also the screening and titration process of your sera.

### **GENEART offers:**

- Utilization of customer or in-house DNA plasmid vectors for enhanced antibody production, also against "weak" or "self-antigens"
- Peptide tags and/or flags serving as intrinsic adjuvant
- Facilitated expression of unstable and toxic proteins by RNA and codon optimization and easy to apply epitope shuffling
- State of the art chemokine/cytokine adjuvant strategies



- Advanced plasmid and transgene delivery
- Validation of antisera in the absence of protein
- All IP remains with the customer

### **Procedure for Production**

Our DNA immunization procedure allows the usage of the most established expression vectors. Only the expression vector or the sequence information as a data file is necessary. If desired, subcloning of your gene of interest into an **optimized in-house immunization vector** is possible at **GENEART**. If no expression data is available, we can subclone and test the gene in our expression test system. We will then prepare DNA with appropriate purity by a standardized preparation procedure and start the immunization immediately.

## *Contact /*

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# DNA IMMUNIZATION FOR ANTIBODY PRODUCTION

► **Basic study design:**

**Day 0:** Pre-dose blood draw (4-8 ml serum) and genetic immunization

**Day 28:** Pre-boost blood draw (4-8 ml serum) and genetic immunization

**Day 56:** Pre-boost blood draw (4-8 ml serum) and genetic immunization

**Day 70:** Terminal blood draw (at least 35 ml serum)

**Additional services are:**

**1. Verification of antisera**  
If desired, the resulting antisera can be tested in-house against the presera either by ELISA, western blot or by FACS analysis on cells transfected with the respective constructs. In case of low titers, a protein boost or a boost with transfected cells is possible.

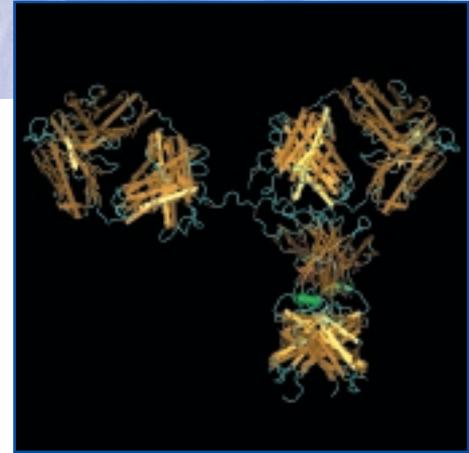
**2. Optimized genes**  
Frequently the administration of RNA and codon optimized synthetic genes foster the induction of enhanced antibody titers even in cases where wild type genes result in weak or no specific antibody responses. Please refer to our "gene synthesis" website ([www.geneart.com](http://www.geneart.com)) or information sheet for further information.

## *Your Success /*

- **Time saving** antibody production process
- **No need for protein or peptide**
- **Highly specific** antibodies with **high affinity**
- Antibodies against conformation dependent epitopes
- Antibodies against toxic or self-polypeptides

**GENEART** technology simplifies and increases the efficiency of DNA immunization by optimizing your gene of interest, utilizing innovative vector constructs for in vivo transgene expression and employing state of the art adjuvant and immunization strategies.

**GENEART's** DNA immunization technology provides you with antibodies detecting native protein structures at reasonable costs and at short notice. Please ask for a quotation.



## *References /*

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- Tighe, H., Corr, M., Roman, M. and Raz, E. (1998): Gene vaccination: plasmid DNA is more than just a blueprint. Immunol. Today 19: 89-97.

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