CLAIMS

1. An immunogenic product comprising at least one immunoglobulin or immunoglobulin fragment conjugated with a carrier protein, wherein the at least one immunoglobulin is IgE, preferably human IgE, and wherein the IgE fragment comprises the IgE Cε3 domain, and wherein the carrier protein is preferably CRM_{197}.

2. The immunogenic product according to claim **1**, wherein the immunoglobulin fragment comprises a part or the totality of the IgE Cε3 and Cε4 domains.

3. The immunogenic product according to claim **1** or claim **2**, wherein the immunoglobulin fragment comprises a part or the totality of the IgE Cε2, Cε3 and Cε4 domains.

4. The immunogenic product according to any one of claims **1** to **3**, wherein the IgE or the fragment thereof comprises the G335C mutation.

5. The immunogenic product according to any one of claims **1** to **4**, wherein the IgE fragment comprises or consists in SEQ ID NO:7.

6. The immunogenic product according to any one of claims **1** to **5**, wherein the IgE fragment comprises at least one glycosylation.

7. A composition comprising the immunogenic product according any one of claims **1** to **6**.

8. A pharmaceutical composition comprising the immunogenic product according any one of claims **1** to **6** and at least one pharmaceutically acceptable excipient.

9. A vaccine composition comprising the immunogenic product according any one of claims **1** to **6** and at least one adjuvant.

10. The composition, pharmaceutical composition or vaccine composition according to any one of claims **7** to **9**, being an emulsion.

11. A method for producing an immunogenic product according to any one of claims **1** to **6**, the method comprising steps of:

a) contacting the immunoglobulin or fragment thereof with a heterobifunctional crosslinker containing a NHS-ester, preferably N-[γ-maleimidobutyryloxy]-succinimide ester (sGMBS), thereby obtaining a complex between a heterobifunctional crosslinker containing a NHS-ester and the immunoglobulin or fragment thereof, preferably a sGMBS-immunoglobulin or fragment thereof complex;

b) contacting the carrier protein with a heterobifunctional crosslinker containing a NHS-ester, preferably N-succinimidyl-S-acetylthioacetate (SATA) to generate a complex between the heterobifunctional crosslinker containing a NHS-ester and the carrier, preferably a carrier-SATA complex;

c) contacting the complex between a heterobifunctional crosslinker containing a NHS-ester and the immunoglobulin or fragment thereof, preferably the sGMBS-immunoglobulin or fragment thereof complex obtained at step (a) with the complex between the heterobifunctional crosslinker containing a NHS-ester and the carrier, preferably the carrier-SATA complex obtained at step (b).

12. An immunogenic product according to any one of claims **1** to **6** for use as a medicament.

13. An immunogenic product according to any one of claims **1** to **6** or a composition, pharmaceutical composition or vaccine composition according to any one of claims **7** to **10**, for treating an inflammatory disorder, preferably wherein the inflammatory disorder is associated with aberrant IgE expression or activity.

14. The immunogenic product or the composition for use according to claim **13**, wherein the inflammatory disorder is selected from the group comprising asthma, allergic conditions (such as, for example, food allergies, venom allergy, allergy to animals, drug allergy, hyper IgE syndrome, allergic rhinitis, allergic conjunctivitis and allergic enterogastritis), anaphylaxis, atopic disorders (such as, for example, urticaria (including chronic idiopathic urticaria and chronic spontaneous urticaria), eczema), bullous pemphigoid, respiratory disorders (such as asthma, allergic

bronchopulmonary aspergilosis, allergic bronchopulmonary mycosis), nasal polyposis and other conditions involving airway inflammation (such as, for example, eosinophilia, fibrosis and excess mucus production including cystic fibrosis, systemic sclerosis (SSc)); inflammatory and/or autoimmune disorders or conditions, gastrointestinal disorders or conditions (such as, for example, inflammatory bowel diseases (IBD) and eosinophilic esophagitis (EE), and eosinophilic-mediated gastrointestinal disease, ulcerative colitis and Crohn's disease); systemic lupus erythematosus; mastocytosis and mast cell activation syndrome (MCAS).

15. The immunogenic product or the composition for use according to claim **13** or claim **14**, wherein the inflammatory disorder is selected from allergy, anaphylaxis, allergic asthma, allergic rhinitis, allergic conjunctivitis, nasal polyposis, preferably wherein said inflammatory disorder is food or venom allergy.

16. An immunogenic product according to any one of claims **1** to **6** or a composition, pharmaceutical composition or vaccine composition according to any one of claims **7** to **10** for inducing desensitization of a subject allergic to a specific antigen, wherein said immunogenic product or composition and said specific antigen are to be administered to the allergic subject.

CLAIMS

1. An immunogenic product comprising at least one immunoglobulin or immunoglobulin fragment conjugated with a carrier protein, wherein the at least one immunoglobulin is IgE, and wherein the IgE fragment comprises the IgE Cε3 domain.

2. The immunogenic product according to claim **1**, wherein the IgE is human IgE.

3. The immunogenic product according to claim **1** or claim **2**, wherein the carrier protein is CRM_{197}.

4. The immunogenic product according to any one of claims **1** to **3**, wherein the immunoglobulin fragment comprises a part or the totality of the IgE Cε3 and Cε4 domains.

5. The immunogenic product according to any one of claims **1** to **3**, wherein the immunoglobulin fragment comprises a part or the totality of the IgE Cε2, Cε3 and Cε4 domains.

6. The immunogenic product according to any one of claims **1** to **5**, wherein the IgE or the fragment thereof comprises the G335C mutation.

7. The immunogenic product according to any one of claims **1** to **6**, wherein the IgE fragment comprises or consists in SEQ ID NO:7.

8. The immunogenic product according to any one of claims **1** to **7**, wherein the IgE fragment comprises at least one glycosylation.

9. A composition comprising the immunogenic product according to any one of claims **1** to **8**.

10. A pharmaceutical composition comprising the immunogenic product according to any one of claims **1** to **8** and at least one pharmaceutically acceptable excipient.

11. A vaccine composition comprising the immunogenic product according to any one of claims **1** to **8** and at least one adjuvant.

12. The composition, pharmaceutical composition or vaccine composition according to any one of claims **9** to **11**, being an emulsion.

13. A method for producing an immunogenic product according to any one of claims **1** to **8**, the method comprising steps of:

a) contacting the immunoglobulin or fragment thereof with a heterobifunctional crosslinker containing a NHS-ester, preferably N-[γ-maleimidobutyryloxy]-succinimide ester (sGMBS), thereby obtaining a complex between a heterobifunctional crosslinker containing a NHS-ester and the immunoglobulin or fragment thereof, preferably a sGMBS-immunoglobulin or fragment thereof complex;

b) contacting the carrier protein with a heterobifunctional crosslinker containing a NHS-ester, preferably N-succinimidyl-S-acetylthioacetate (SATA) to generate a complex between the heterobifunctional crosslinker containing a NHS-ester and the carrier, preferably a carrier-SATA complex;

c) contacting the complex between a heterobifunctional crosslinker containing a NHS-ester and the immunoglobulin or fragment thereof, preferably the sGMBS-immunoglobulin or fragment thereof complex obtained at step (a) with the complex between the heterobifunctional crosslinker containing a NHS-ester and the carrier, preferably the carrier-SATA complex obtained at step (b).

14. Use of an immunogenic product according to any one of claims **1** to **8**, or a composition, pharmaceutical composition or vaccine composition according to any one of claims **9** to **12**, in the manufacture of a medicament for treating an inflammatory disorder.

15. The use according to claim **14**, wherein the inflammatory disorder is associated with aberrant IgE expression or activity.

16. The use according to claim **14** or **15**, wherein the inflammatory disorder is selected from the group comprising asthma, allergic conditions (such as, for example, food

allergies, venom allergy, allergy to animals, drug allergy, hyper IgE syndrome, allergic rhinitis, allergic conjunctivitis and allergic enterogastritis), anaphylaxis, atopic disorders (such as, for example, urticaria (including chronic idiopathic urticaria and chronic spontaneous urticaria), eczema), bullous pemphigoid, respiratory disorders (such as asthma, allergic bronchopulmonary aspergilosis, allergic bronchopulmonary mycosis), nasal polyposis and other conditions involving airway inflammation (such as, for example, eosinophilia, fibrosis and excess mucus production including cystic fibrosis, systemic sclerosis (SSc)); inflammatory and/or autoimmune disorders or conditions, gastrointestinal disorders or conditions (such as, for example, inflammatory bowel diseases (IBD) and eosinophilic esophagitis (EE), and eosinophilic-mediated gastrointestinal disease, ulcerative colitis and Crohn's disease); systemic lupus erythematosus; mastocytosis and mast cell activation syndrome (MCAS).

17. The use according to any one of claims **14** to **16**, wherein the inflammatory disorder is selected from allergy, anaphylaxis, allergic asthma, allergic rhinitis, allergic conjunctivitis, nasal polyposis.

18. The use according to claim **17**, wherein said inflammatory disorder is food or venom allergy.

19. Use of an immunogenic product according to any one of claims **1** to **8**, or a composition, pharmaceutical composition or vaccine composition according to any one of claims **9** to **12**, in the manufacture of a medicament for inducing desensitization of a subject allergic to a specific antigen, wherein said immunogenic product or composition and said specific antigen are to be administered to the allergic subject.