

**NALSAR PROXIMATE EDUCATION
NALSAR UNIVERSITY OF LAW, HYDERABAD
P.G.DIPLOMA IN PATENTS LAW**

**2015-16
Supplementary Exams (November, 2016)**

Paper II – Practical

(Exploitation of Patents – Drafting, Specification & Patent Writing)

Time: 2 ½ hours.

TOTAL MARKS: 90

INSTRUCTIONS TO CANDIDATES

- 1. The questions to be interpreted as given and no clarification can be sought from the invigilator.**
- 2. Do not draw or attach figures**
- 3. The claim drafting will carry 40 marks**
- 4. The rest of the specification will carry 50 marks**
- 5. Attempt only one choice – either A or B**

Draft a Patent based on the information given by the inventor as below:

- A.** Joseph Vijay is an immigrant Indian settled in New York as a baseball coach. In his experience as a coach he found the baseball players getting injured often and comes out with an invention, which will avoid injuries, and he approaches you to file a Patent for his invention and gives you the following invention disclosure.

You are required to write a complete specification based on the disclosure given below. You need not reproduce the figures and need not explain the figures.

When a baseball player is gripping the end of a baseball bat while standing at the plate during his turn at bat, a pitcher is throwing a baseball in the direction of the batter with the intent to have the baseball travel over a portion of home plate so that the pitch will be a strike. The baseball is thrown with substantial velocity and movement so that the batter will miss the baseball when swinging at it with the bat. In an attempt to fool the batter or sometimes to intimidate the batter, the pitcher will throw the baseball at a location where it comes close to where the batter is standing. The image of a baseball traveling at a high rate of speed and also moving in a non-straight line can be intimidating. The batter will try to jump back or out of the way if there is sufficient time to react to the pitch. If the pitch is too fast or the batter does not react quickly enough to jump out of the way, the natural reaction is to raise the baseball bat with both hands so that the batter's hand which is closest to the direction from which the baseball is thrown is in front of the batter's head and face to protect the batter's head and face. If the batter is swinging the bat, during the swinging motion, the portion of the batter's hand and wrist which is closest to the pitcher after completion of a swing is also exposed to the fast moving baseball. As a result, the portion of the batter's hand and wrist which is most exposed during these situations can be hit with the baseball.

To help protect the batter's hands, the batter typically wears at least one batting glove and usually a pair of batting gloves. In the prior art, padding has been placed in the batting glove at a location of the fingers when the glove is worn, at a location on the back of the hand when the glove is worn and at a location on the palm when the glove is worn.

Referring to FIG. 1, there is illustrated a skeleton of a left hand and wrist 20 which includes fingers, the hand and the wrist. The skeleton is viewed from the palm of the hand. The hand and wrist 20 consists of twenty-seven (27) bones as illustrated. The carpal bones of the wrist include the scaphoid 1, the lunate 2, the triquetrum 3, the pisiform 4, the trapezium 5, the trapezoid 6, the capitate 7 and the hamate 8. The hand has metacarpal bones respectively associated with a given finger. The bones of fingers have three sections for the thumb and four sections for the other four fingers. The thumb has a metacarpal bone 9 of the hand aligned with it and a proximal phalange 14 and a distal phalange 16. The index finger has a metacarpal bone 10 of the hand aligned with it and three phalanges--proximal 14, middle 15 and distal 16. The middle finger has a metacarpal bone 11 and three phalanges--proximal 14, middle 15 and distal 16. The fourth finger has a metacarpal bone 12 of the hand aligned with it and three phalanges--proximal 14, middle 15 and distal 16. The pinkie finger has a metacarpal bone 13 of the hand aligned with it and three phalanges--proximal 14, middle 15 and distal 16. It is frequently the bones of the wrist and in particular the hamate 8, the pisiform 4 and the lunate 2 as well as the metacarpal bone 13 in the hand which are aligned with the pinkie finger and which most frequently can sustain damage when a baseball hits the batter's hand as the batter is attempting to protect himself or when a batter's hand is vulnerable after a swing of the bat. In addition, the metacarpal bone 12 aligned with the fourth finger and metacarpal bone 11 aligned with the middle finger can sustain damage when a baseball hits the batter's hand as the batter is attempting to protect himself or when a batter's hand is vulnerable after a swing of the bat.

Referring to FIG. 2, there are eight carpal bones in the wrist divided equally in two rows. The row closer to the arm consists of four bones: scaphoid 1, lunate 2, pisiform 4 and triquetrum 3. The row closer to the hand consist of four bones called trapezium 5, trapezoid 6, capitate 7 and hamate 8. These bones provide a connection between the two bones of the forearm, ulna 17 and radius 18, and the bones making up the hand. There are three different joints in the wrist all contributing to the movement here: the radiocarpel (wrist) joint between the lower end of the radius and the carpal bones on the thumb side of the wrist; the midcarpal joint between the two rows of carpal bones; and the carpometacarpal joint between the carpal ones closer to the hand and the metacarpal bones of the hand. These bones and joints are collectively referred to as "wrist bones". It is also frequently the wrist bones that can sustain damage when a baseball hits the batter's hand and wrist as the batter is attempting to protect himself or when a batter's hand and wrist are vulnerable after a swing of the bat.

It has been discovered, according to the present invention, that if impact and shock absorbing material are incorporated into the top exterior of a baseball glove so that the impact and shock absorbing material covers the area of the hand and wrist including the pinkie finger and bones of the pinkie, metacarpal bones of the hand aligned with the pinkie finger and also with the fourth and middle fingers, and aligned wrist bones and ulna bone which is connected to the forearm, then the most vulnerable portions of the batter's hand and wrist and lower forearm are protected against impact if a thrown baseball hits these areas when a batter is protecting himself from a thrown pitch or most vulnerable after a swing is completed and these areas of the hand, wrist and lower forearm are exposed to the oncoming baseball.

It has been discovered, according to the present invention, that if impact and shock absorbing material are incorporated into the top exterior of a baseball glove so that the impact and shock absorbing material covers at least the area of the hand and wrist including the metacarpal bone 13 of the hand aligned with the pinkie finger and the wrist bones on the exterior most portion of the hand aligned with the pinkie finger which are the hamate 8, triquetrum 3 and pisiform 4, then the most vulnerable portions of the batter's hand and wrist are protected against impact if a thrown baseball hits these areas when a batter is protecting himself from a thrown pitch or most vulnerable during a swing of the bat and these areas of the hand and wrist are exposed to the oncoming baseball.

It has further been discovered, according to the present invention, that the maximum protection and flexibility of gripping the bat is afforded a batter if the gloves worn on the right hand and the left hand are matched so that the impact and shock absorbing material of each glove will be exposed in the direction of a thrown ball when a batter is gripping a baseball bat, if the batter raises the gripped bat to cause the batting gloves to protect the batter's face and head, and during and after the completion of a swing of a bat, and the gloves are designed so that the adjacent area of the second glove does not have shock absorbing material on it so that there is a smooth fit at the adjacent location of the two gloves as the batter grips the baseball bat. In this way, the primary glove which has the impact and energy absorbing material positioned at a location to receive an impact from a baseball is not interfered with by the second non-primary glove which is smooth and does not have any impact and shock absorbing material at the location where the gloves are adjacent to each other when the baseball bat is gripped by the batter, and this combination causes a lack of interference with the batter's normal grip of a baseball bat so that the batter's normal swing is not impaired. The secondary glove also has impact and shock absorbing material on it to cushion that hand of the player when the position of the batter causes that hand to be exposed to a thrown baseball.

It has also been discovered, according to the present invention, that if the impact and energy absorbing material is formed on the outside of the protective glove and is left exposed and uncovered, then the impact and absorbing performance of the material will be substantially increased to thereby more effectively receive the impact from the force of the object such as the baseball and cushion the blow against the wearer of the glove. It is also within the spirit and scope of the present invention to cover the impact and energy absorbing material with fabric, leather or other covering material

It has additionally been discovered, according to the present invention, that if the impact absorbing material is comprised of a multiplicity of impact absorbing cells which are separated from each other by a gap, then the gap facilitates flexibility of the glove so that the batter can grip the bat and swing the bat without interference from the batting glove. The shock absorbing material can be in the form of a matrix of cells of shock absorbing material formed in a lattice with an interconnecting layer onto which the shock absorbing cells are attached, which layer is integrally formed with the material of the glove to enhance retention of the shock absorbing material. Further, the interconnecting layer and shock absorbing cells are flexible so that they can flex with the glove as the gloved hand is wrapped around the bat handle and conform to the shape of the curved glove as it is wrapped around the bat handle to thereby provide maximum flexibility for the glove. By forming the flexible shock absorbing material so that it extends to protect the wearer's wrist bones and ulna bone which connects the wrist bones to the lower forearm, the most vulnerable bones, which if broken can cause substantial recovery periods of career ending injury, are most protected.

It is a key object of the present invention to prevent injury to the wrist bones of the batter when a pitch is thrown too close to a batter, and as the batter draws his hands into a defensive position to both get away from the ball and to protect the batter's head, the arrangement of the protective pads on the present invention gloves are such that the referenced bones in the wrist are protected by the padding arrangement, a benefit which prior art gloves do not provide.

It is an object of the present invention to have at least one batting glove which comprises impact and shock absorbing material incorporated into the top exterior of a baseball glove so that the impact and shock absorbing material covers at least the area of the hand aligned with the pinkie finger and the area of the wrist aligned with the pinkie finger and in addition may also cover the area of the pinkie finger and bones of the pinkie, metacarpal bones of the hand aligned with the pinkie finger and also with the fourth and middle fingers, and aligned wrist bones and ulna bone which is connected to the forearm, so that the most vulnerable portions of the batter's hand and wrist and lower forearm are protected against impact if a thrown baseball hits these areas when a batter is protecting himself from a thrown pitch or most vulnerable after a swing is completed or partially completed and these areas of the hand, wrist and lower forearm are exposed to the oncoming baseball.

BRIEF DESCRIPTION OF THE DRAWINGS

Referring particularly to the drawings for the purpose of illustration only and not limitation, there is illustrated:

FIG. 1 is a drawing of the skeleton bones of a hand including the metacarpal bones of a hand and phalanges bones of the fingers, as well as the carpal bones in the wrist;

FIG. 3 is a top plan view of a first embodiment of the BASEBALL BATTING GLOVE WITH PROTECTIVE SHOCK ABSORBING MEMBERS ON THE EXTERIOR OF THE GLOVE which is a right handed glove used by a right handed batter;

FIG. 17 is a perspective view of the first and second embodiments of the present invention as worn by a right handed batter when gripping the bottom end of a baseball bat being swung in the middle of a swing with a baseball coming in the direction of the batter's hands during the swing, with both gloves having impact and shock absorbing material to protect the batter in various swinging positions. The baseball bat is shown in dotted lines and is not a part of this invention and the batter is also shown in dotted lines and is not a part of this invention;

FIG. 30 is a perspective view of the third and fourth embodiments of the present invention as worn by a left handed batter when gripping the bottom end of a baseball bat while standing at home plate to await a pitch, the baseball bat is shown in dotted lines and is not a part of this invention and a portion of a batter's arm is also shown in dotted lines and is not a part of this invention;

FIGURES

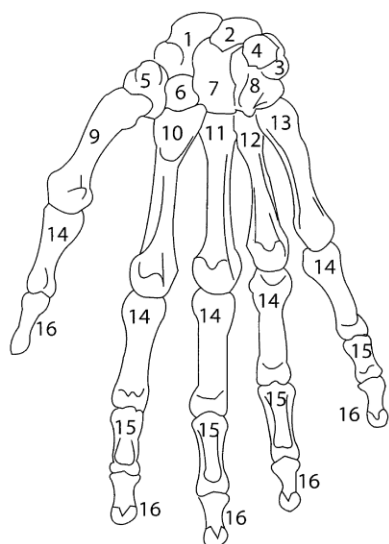


FIG. 1

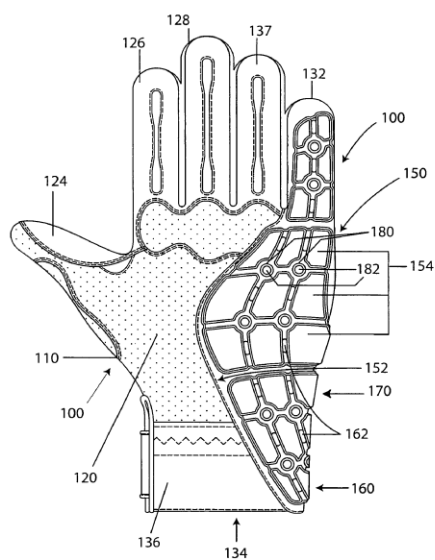


FIG. 3

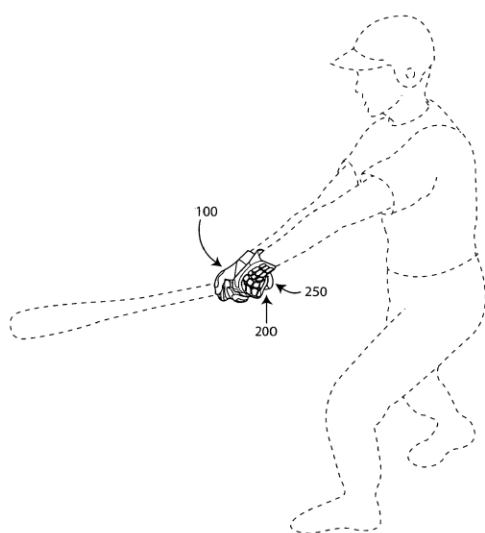


FIG. 17

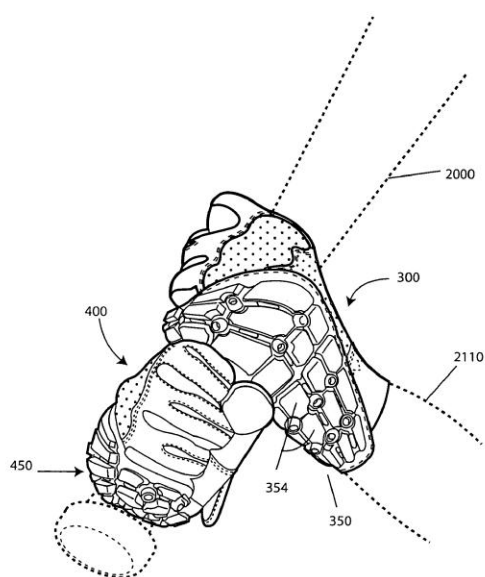


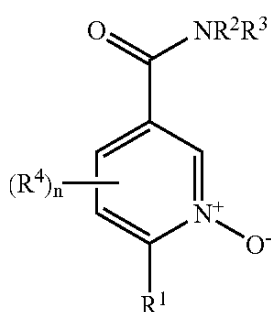
FIG. 30

B. Dr. Eswari working in a leading pharma company wanted to patent her invention and approaches you to draft a complete specification and gives the following disclosure.

You are required to draft a complete specification. Drawings and reference to drawings are not required as part of the answer.

The present invention relates to novel nicotinamide N-oxide compounds useful as pharmaceutical agents, to methods for their production, to pharmaceutical compositions which include these compounds and a pharmaceutical carrier, and to pharmaceutical methods of treatment. The compounds of the present invention are G-protein-coupled, seven transmembrane domain (7TM) receptor antagonists. In particular, the compounds of the invention are useful for the prophylaxis and treatment of diseases or conditions involving inflammation due to neutrophil chemotaxis mediated via the CXCR1 and CXCR2 receptors. This invention also relates to intermediates and processes useful in the preparation of such compounds.

In one aspect, the present invention provides a compound having the structure (I):

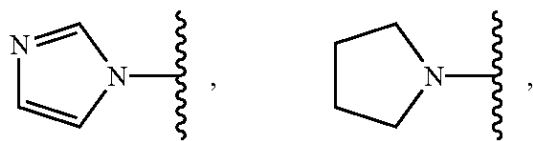


and optical isomers, diastereomers, enantiomers and pharmaceutically acceptable salts thereof, wherein R^{sup.1} is selected from R^{sup.5} and R^{sup.5}-(C_{sub.1} C_{sub.6}heteroalkylene)- where R^{sup.5} is selected from hydrogen, halogen, alkyl, heteroalkyl, aryl, heteroaryl, carbocycle aliphatic ring and heterocycle aliphatic ring, amino or hydroxy; R^{sup.2} and R^{sup.3} are independently hydrogen, alkyl, heteroalkyl, aryl, aryl(alkylene), heteroaryl, heteroaryl(alkylene), carbocycle, carbocycle(alkylene), heterocycle, and heterocycle(alkylene); each occurrence of R^{sup.4} is independently selected from halogen, alkyl, heteroalkyl, aryl, heteroaryl, carbocycle aliphatic ring and heterocycle aliphatic ring, amino or hydroxy; and n is 0, 1, 2 or 3.

In various aspects, the present invention provides compounds of structure (I) as defined above, however: n is 0; or n is 1; or R^{sup.2} is H; or n is 0 and R^{sup.2} is H; or n is 1 and R^{sup.2} is H.

In addition, in any of the above-described aspects, the present invention provides compounds wherein R^{sup.1} is R^{sup.5}--SO_{sub.2}-- and R^{sup.5} is selected from alkyl, heteroalkyl, aryl, carbocycle, aryl(alkylene), and carbocycle(alkylene); or R^{sup.1} is R^{sup.5}--SO_{sub.2}-- and R^{sup.5} is selected from alkyl, heteroalkyl, aryl, carbocycle, aryl(alkylene), and carbocycle(alkylene) where alkyl is C_{sub.1} C_{sub.10}alkyl, heteroalkyl is C_{sub.1} C_{sub.10}alkyl with 1, 2 or 3 heteroatoms selected from N, O and S, aryl is phenyl, substituted phenyl, naphthyl or substituted naphthyl, carbocycle is C_{sub.3} C_{sub.8}carbocycle, and alkylene is C_{sub.1} C_{sub.10}alkylene; or R^{sup.1} is R^{sup.5}--SO_{sub.2}-- and R^{sup.5} is selected from alkyl, heteroalkyl, aryl, carbocycle, aryl(alkylene), and carbocycle(alkylene) such that R^{sup.1} is selected from (C_{sub.1} C_{sub.6}alkyl)SO_{sub.2}--, PhSO_{sub.2}--, fluorinatedphenylSO_{sub.2}--, PhCH_{sub.2}SO_{sub.2}--, cyclopentylSO_{sub.2}--, m-carboxyphenylSO_{sub.2}--, m-methylphenylSO_{sub.2}--, and HOOC--(C_{sub.1} C_{sub.4}alkylene)SO_{sub.2}--.

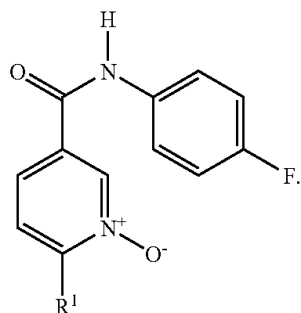
In addition, in any of the above-described aspects, unless otherwise inconsistent therewith, the present invention provides compounds of structure (I) wherein R^{sup.1} is selected from halogen, amino, hydrocarbylamino, dihydrocarbylamino, hydrocarbyloxy, hydrocarbylthio, heterocyclyl, (heteroalkyl)amino, and (heteroaryl)amino; optionally, R^{sup.1} is selected from amino, (C_{sub.1} C_{sub.6}alkyl)(C_{sub.1} C_{sub.6}alkyl)amino, PhNH--, PhCH_{sub.2}NH--,



and HOCH_{sub.2}CH_{sub.2}NH--; optionally, R^{sup.1} is selected from halide and (C_{sub.1} C_{sub.6}alkyl)S--; optionally R^{sup.1} is chloride.

In addition, in any of the above-described aspects, unless otherwise inconsistent therewith, the present invention provides compounds of structure (I) wherein R^{sup.3} is selected from aryl, aryl(alkylene), heteroaryl, and heteroaryl(alkylene); optionally R^{sup.3} is aryl.

In another aspect, the present invention provides a compound having structure (II)



In addition, in any of the above-described aspects, unless otherwise inconsistent therewith, the present invention provides compounds of structure (I) wherein R^{sup.3} is benzyl or phenyl, the benzyl or phenyl having 0, 1, 2, 3 or 4 substituents selected from alkoxy, alkoxycarbonyl, alkyl, alkylamido, alkylcarbonyl, amido, benzyl optionally substituted with halogen, benzyloxy, carboxy, cyano, dialkylamido, haloalkyl, haloalkyloxy, halogen, hydroxy, nitro, oxoalkyl, phenyl optionally substituted with halogen, thioalkyl, thiocyanate, and thiohaloalkyl.

In addition, in any of the above-described aspects, unless otherwise inconsistent therewith, the present invention provides compounds of structure (I) wherein R^{sup.3} is selected from cycloalkyl, cycloalkyl(alkylene), cycloalkyl(heteroalkylene), heterocycloalkyl, heterocycloalkyl(alkylene), heterocycloalkyl(heteroalkylene), heteroaryl, heteroaryl(alkylene), and heteroaryl(heteroalkylene).

In addition, in any of the above-described aspects, unless otherwise inconsistent therewith, the present invention provides compounds of structure (I) wherein R^{sup.1} is selected from halogen, heteroalkyl or amino, R^{sup.2} is H, R^{sup.3} is aryl and R^{sup.4} is H.

In addition, the present invention provides each of the following compounds, either separately (i.e., in isolation) or in any combination: 6-chloro-N-(4-fluoro-phenyl)-1-oxy-nicotinamide; N-(4-fluoro-phenyl)-6-(2-hydroxy-ethylamino)-1-oxy-nicotinamide; 6-bromo-N-(4-fluoro-phenyl)-1-oxy-nicotinamide; 5,6-dichloro-N-(4-fluoro-phenyl)-1-oxy-nicotinamide; 6-ethanesulfonyl-N-(4-fluoro-phenyl)-1-oxy-nicotinamide; N-(4-

fluorophenyl)-1-oxy-6-(propane-2-sulfonyl)-nicotinamide; N-(4-fluoro-phenyl)-6-methanesulfonyl-1-oxy-nicotinamide; 6-benzenesulfonyl-N-(4-fluoro-phenyl)-1-oxy-nicotinamide; N-(4-fluoro-phenyl)-1-oxy-6-phenylmethanesulfonyl-nicotinamide; 6-chloro-N-(3-chloro-4-fluoro-phenyl)-1-oxy-nicotinamide; and 6-chloro-N-(4-iodo-phenyl)-1-oxy-nicotinamide.

In another aspect, the present invention provides composition comprising a compound or compounds as set forth in any of the above-mentioned aspects, and a pharmaceutically acceptable carrier, adjuvant or excipient.

Furthermore, the present invention provides a method for antagonizing chemokine receptors comprising administering to a patient in need thereof an effective amount of a compound as set forth in any of the above-mentioned aspects.

The present invention also provides a method for inhibiting a chemokine-mediated cellular event comprising administering to a patient in need thereof an effective amount of a compound as set forth in any of the above-mentioned aspects. Optionally, the compounds inhibits a CXCR1 receptor; and/or inhibits a CXCR2 receptor.

The present invention additionally provides a method for the treatment of a disorder selected from Inflammatory Bowel Disease (IBD), psoriasis, rheumatoid arthritis, Acute Respiratory Distress Syndrome (ARDS), cancer, atherosclerosis, reperfusion injury, and graft vs. host disease.

In a further aspect, the present invention provides a method for inhibiting a G-protein-coupled, seven-transmembrane domain (7TM) receptor in a patient comprising administering to the patient a compound as set forth in any of the above-mentioned aspects in an amount effective to inhibit the receptor. Optionally, the compound modulates the binding of MIP-1.beta. to a NPY cell receptor; and/or the compound modulates the binding of MIP-1.beta. to a somatostatin cell receptor; and/or the compound modulates the binding of MIP-1.beta. to a CCR5 cell receptor.

The present invention also provides a method for treating an inflammation event, comprising administering to a patient in need thereof, through a therapeutically or prophylactically acceptable manner, a therapeutically or pharmaceutically effective amount of a compound as set forth in any of the above-mentioned aspects. Optionally, the administration is selected from transdermal, oral, intravenous, intramuscular, vaginal, rectal, pulmonary, subcutaneous, sublingual and transmucosal administration.

Furthermore, the present invention provides a method for identifying a binding partner to a compound as set forth in any of the above-mentioned aspects comprising: immobilizing proteins known to be involved in the TNF-.alpha. signaling pathway onto a suitable carrier; and passing a solution of said compounds in isolation or mixture over said proteins and analyzing for compound:protein complex formation using surface plasmon resonance (SPR).

In another aspect, the present invention provides a method for identifying a binding partner to a compound as set forth in any of the above-mentioned aspects comprising: providing said compound(s) bound to a solid support to provide solid phase compounds; contacting a cell or cell components with said solid phase compounds in isolation or mixture; removing uncomplexed cellular material, for example by gentle washing with aqueous buffer; and recovering said binding partner from the solid phase compounds.