

# NIKOLOS PHARMA

## Pharmaceutical API, Key Intermediate & Basic Raw Materials

| No. | API / Active Substance         | API CAS No.               | Representative Key Intermediate(s)                                                   | Basic Starting Material / Raw Material                                                             | Raw Material CAS No.                              | Type               |
|-----|--------------------------------|---------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------|
| 1   | Abemaciclib                    | 1231929-97-7              | Fluorinated heterocyclic/pyrimidine intermediates; substituted pyridine intermediate | 3,5-Difluorobromobenzene; N-ethylpiperazine; pyrimidine building blocks                            | 461-96-1; 5308-25-8                               | Chemical API       |
| 2   | Adalimumab                     | 331731-18-1               | Recombinant monoclonal-antibody drug substance                                       | Mammalian cell culture system; amino acids; glucose; growth supplements; buffers                   | N/A – biological manufacturing                    | mAb                |
| 3   | Guselkumab                     | 1358156-13-2              | Recombinant monoclonal antibody                                                      | Mammalian cell line; cell-culture nutrients; amino acids; glucose; buffers                         | N/A – biological manufacturing                    | mAb                |
| 4   | Upadacitinib                   | 1310726-22-9              | Chiral pyrrolidine/azacyclic and heteroaromatic intermediates                        | Chiral amine/pyrrolidine building blocks; substituted heteroaromatic starting materials            | Route-dependent                                   | Chemical API       |
| 5   | Apixaban                       | 503612-47-3               | 1-(4-Iodophenyl)piperidin-2-one; morpholino-pyridone; pyrazolopyridine intermediates | 4-Iodoaniline; 5-bromovaleryl chloride; morpholine; 2-piperidone; 4-methoxyaniline                 | 540-37-4; 1575-51-3; 110-91-8; 609-66-5; 104-94-9 | Chemical API       |
| 6   | Bictegravir                    | 1611493-60-7              | Carbamate/oxazepane and bicyclic heterocyclic intermediates                          | Chiral amino-alcohol/heterocyclic building blocks; protected amines                                | Route-dependent                                   | Chemical API       |
| 7   | Emtricitabine                  | 143491-57-0               | Protected oxathiolane intermediate                                                   | Cytosine; protected oxathiolane precursor; sulfur-containing chiral building block                 | 71-30-7 (cytosine)                                | Nucleoside API     |
| 8   | Tenofovir Alafenamide          | 379270-37-8               | Tenofovir intermediate; phosphoramidate prodrug intermediate                         | Tenofovir; L-alanine/isopropyl ester derivatives; phenoxy phosphoramidate building block           | Route-dependent                                   | Chemical API       |
| 9   | Dapagliflozin                  | 461432-26-8               | Halogenated aryl/benzyl intermediate; protected glucoside                            | Halogenated benzene derivative; protected glucose/gluconolactone derivative                        | Route-dependent                                   | Chemical API       |
| 10  | Empagliflozin                  | 864070-44-0               | Halogenated aryl intermediate; protected glucoside                                   | Halogenated benzyl/aryl precursor; protected D-glucose/gluconolactone derivatives                  | Route-dependent                                   | Chemical API       |
| 11  | Daratumumab                    | 945377-65-1               | Recombinant monoclonal antibody                                                      | Mammalian cell culture; amino acids; glucose; trace elements; buffers                              | N/A – biological manufacturing                    | mAb                |
| 12  | Dupilumab                      | 1190264-60-8              | Recombinant monoclonal antibody                                                      | Mammalian cell culture media; amino acids; sugars; buffers                                         | N/A – biological manufacturing                    | mAb                |
| 13  | Durvalumab                     | 1428935-60-7              | Recombinant anti-PD-L1 antibody                                                      | Mammalian cell line; cell-culture nutrients; amino acids; glucose                                  | N/A – biological manufacturing                    | mAb                |
| 14  | Nivolumab                      | 946414-94-4               | Recombinant monoclonal antibody                                                      | Mammalian cell culture media; amino acids; glucose; buffers                                        | N/A – biological manufacturing                    | mAb                |
| 15  | Pembrolizumab                  | 1374853-91-4              | Recombinant monoclonal antibody                                                      | Mammalian cell line; chemically defined media; amino acids; glucose; buffers                       | N/A – biological manufacturing                    | mAb                |
| 16  | Berahyaluronidase alfa         | N/A – recombinant enzyme  | Recombinant hyaluronidase drug substance                                             | Recombinant expression system; cell-culture nutrients; amino acids; sugars                         | N/A – biological manufacturing                    | Recombinant enzyme |
| 17  | Faricimab                      | 868101-59-1               | Recombinant bispecific antibody                                                      | Mammalian cell culture system; amino acids; glucose; nutrients; buffers                            | N/A – biological manufacturing                    | Bispecific mAb     |
| 18  | HPV vaccine                    | N/A – antigen mixture     | Recombinant HPV L1 virus-like particles                                              | Recombinant expression system; L1 antigen production materials; culture media; adjuvant components | N/A – biological manufacturing                    | Vaccine            |
| 19  | Pneumococcal conjugate vaccine | N/A – antigen/conjugate   | Purified pneumococcal polysaccharide-carrier protein conjugates                      | Pneumococcal polysaccharide; carrier protein; activation/conjugation reagents                      | Route-dependent                                   | Vaccine            |
| 20  | Recombinant zoster vaccine     | N/A – recombinant antigen | Recombinant VZV glycoprotein E                                                       | Recombinant expression system; gE antigen production materials; adjuvant components                | N/A – biological manufacturing                    | Vaccine            |
| 21  | Ocrelizumab                    | 637757-31-8               | Recombinant monoclonal antibody                                                      | Mammalian cell culture media; amino acids; glucose; buffers                                        | N/A – biological manufacturing                    | mAb                |
| 22  | Ofatumumab                     | 896483-59-1               | Recombinant monoclonal antibody                                                      | Mammalian cell culture media; amino acids; glucose; buffers                                        | N/A – biological manufacturing                    | mAb                |
| 23  | Osimertinib                    | 714272-27-2               | Chloropyrimidine; substituted-indole; acrylamide intermediates                       | 2,4-Dichloropyrimidine; substituted indole; dimethylamine-containing building block                | Route-dependent                                   | Chemical API       |
| 24  | Ribociclib                     | 1211441-98-3              | Aminopyrimidine and piperazine intermediates                                         | 2-Aminopyrimidine building blocks; piperazine derivative; cyclopentyl-containing building blocks   | Route-dependent                                   | Chemical API       |

|    |              |              |                                                                         |                                                                                                   |                                |              |
|----|--------------|--------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------|--------------|
| 25 | Risankizumab | 183308-54-7  | Recombinant monoclonal antibody                                         | Mammalian cell culture media; amino acids; glucose; buffers                                       | N/A – biological manufacturing | mAb          |
| 26 | Secukinumab  | 1229022-88-7 | Recombinant monoclonal antibody                                         | Mammalian cell culture media; amino acids; glucose; buffers                                       | N/A – biological manufacturing | mAb          |
| 27 | Ustekinumab  | 815610-63-0  | Recombinant monoclonal antibody                                         | Mammalian cell culture media; amino acids; glucose; buffers                                       | N/A – biological manufacturing | mAb          |
| 28 | Sacubitril   | 149690-05-1  | Chiral amino-acid derivative; biphenyl intermediate                     | Chiral amino-acid building blocks; biphenyl derivatives; carboxylic-acid intermediates            | Route-dependent                | Chemical API |
| 29 | Valsartan    | 137862-53-4  | Biphenyl-tetrazole intermediate; valine derivative                      | L-Valine; bromomethyl-biphenyl derivatives; tetrazole precursor                                   | 72-18-4 (L-valine)             | Chemical API |
| 30 | Semaglutide  | 910463-68-2  | Protected peptide fragments; fatty-acid side-chain intermediate         | Protected amino acids; peptide linker; octadecanedioic-acid-derived side chain; coupling reagents | Route-dependent                | Peptide API  |
| 31 | Tafamidis    | 594839-88-0  | Benzoxazole intermediate                                                | Halogenated aromatic acid derivatives; aminophenol/benzoxazole precursors                         | Route-dependent                | Chemical API |
| 32 | Tirzepatide  | 2023788-19-2 | Protected peptide fragments; linker/fatty-acylated peptide intermediate | Protected amino acids; peptide linker; fatty-acid side chain; coupling/deprotection reagents      | Route-dependent                | Peptide API  |