## Schematics and Nomenclature for Biologicals in Psoriatic Arthritis

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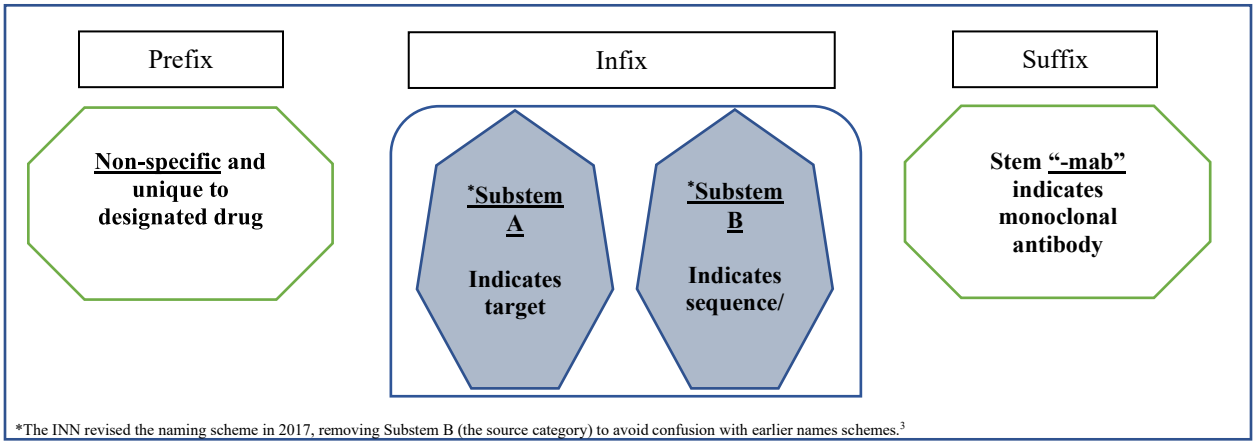
**Monoclonal Antibody Nomenclature Structure**




**Infix (Substem A and Substem B) Definitions** [2-5]

| Stem definitions |
|---|
| ***-k(i)(n)-*** *(interleukin targeted)* |
| ***-l(i)-*** *(immunomodulating)* |
| ***-li(m)-*** *(immune system)* |
| ***-xi-*** *(chimeric)* |
| ***-u-*** *(human)* |
| ***-zu-*** *(humanized)* |

There are two major classes of monoclonal antibodies used in the management of psoriatic arthritis, tumor necrosis factor inhibitors (TNF-I) and interleukin pathway inhibitors (IL-12/23/17i). TNF-Is were the first to appear on the market with the approval of infliximab (Remicade) in 1998. The first IL-12/23i emerged in 2009 with the approval of ustekinumab (Sterlera). Today, there are several newly developed therapies with unique nomenclature as shown in (table 2).

**Table 2. Break-down of PsA Monoclonal Antibody Nomenclature**

| *Name (approval year)* | *Prefix* | *Subtem A* | *Subtem B* | *Suffix* | *Trade Name* | *Drug Class* |
|---|---|---|---|---|---|---|
| *Infliximab (1998)* | Inf | li | xi | mab | Remicade | TNF-i |
| *Adalimumab (2002)* | Ada | lim | u | mab | Humira | TNF-i |
| *Certolizumab (2008)* | Certo | li | zu | mab | Cimzia | TNF-i |
| *Golimumab (2009)* | Go | lim | u | mab | Simponi | TNF-i |
| *Secukinumab (2015)* | Secu | kin | u | mab | Cosentyx | IL-17i |
| *Ixekizumab (2016)* | Ixe | ki | zu | mab | Taltz | IL-17i |
| *Brodalumab (2017)* | Broda | l | u | mab | Siliq | IL-17i |
| *Ustekinumab (2009)* | Uste | kin | u | mab | Stelara | IL-12/23i |
| *Risankizumab (2019)* | Risan | ki | zu | mab | Skyrizi | IL-23i |
| *Guselkumab (2017)* | Guse | lk | u | mab | Tremfya | IL-23i |
| *Tildrakizumab (2018)* | Tildra | ki | zu | mab | ILumya | IL-23i |

## Newly Developed Interleukin (IL) Agents

Over the last 3 years, interleukin inhibitors have been a popular target in drug development for the management of PsO and PsA. There are five newly developed FDA approved agents - Taltz , Siliq, Tremfya, Ilumya, and Skyrizi[6-10]. These agents differ in dosing and mechanism of specific IL target which can be seen in (table 3). The approval of these agent have provided alternative treatment options for patients with complex disease progression. Unfortunately, the accessibility of these agents to patients may be cumbersome due to the burden of cost. As with many monoclonal antibodies and newly approved drugs, generic substitutions are nearly nonexistent. Understanding the naming of these new monoclonal antibodies may provide insight and/or guidance to providers on the desired target for treatment. Most of the agents have FDA approval for the treatment of PsO instead of PsA, however, maintenance treatment of PsO may provide PsA relief due to these cohabited disease states.

**Table 3: Recently Approved IL Agents[6-10]**

| DRUG | USUAL DOSING | INTERLEUKIN TARGET/MOA | CONTRAINDICATIONS | WARNING/PRECAUTIONS |
|---|---|---|---|---|
| **TALTZ ® (IXEKIZUMAB) – (APPROVED 2016)** | PsA: (SC) 160 mg at week 0, followed by 80 mg every 4 weeks<br><br>PsO: (SC) 160 mg at week 0, followed by 80 mg at weeks 2,4,6,8,10, and 12, then 80 mg every 4 weeks | Selectively binds to IL-17A cytokine and inhibits receptor binding. Inhibits proinflammatory cytokines and chemokines. | Previous hypersensitivity reaction to Taltz or any of its excipients | May worsen Chron's disease and Ulcerative colitis<br><br>TB screening required prior to administration |
| **SILIQ ® (BRODALUMAB) – (APPROVED 2017)** | PsO: (SC) 210 mg at weeks 0,1, and 2 followed by 210 mg every 2 weeks | Selectively binds to IL-17RA to inhibit activation of IL17 and other proinflammatory cytokines and chemokines | Chron's disease (may worsen condition) | REMS program<br><br>Suicidal ideation<br><br>TB screening required prior to administration |
| **TREMFYA ® (GUSELKUMAB) – (APPROVED 2017)** | PsO: (SC) 100 mg at weeks 0 and 4, followed by every 8 weeks thereafter | Selectively binds to IL23 and inhibits receptor binding. Inhibits release of proinflammatory cytokines and chemokines. | Previous hypersensitivity reaction to Tremfya or any of its excipients | Increase risks for infections<br><br>TB screening required prior to administration |
| **SKYRIZI ® (RISANKIZUMAB) – (APPROVED 2019)** | PsO: (SC) 150 mg at weeks 0 and 4, followed by every 12 weeks thereafter | Selectively binds to IL23 and inhibits receptor binding. Inhibits release of proinflammatory cytokines and chemokines. | None | Increase risks for infections<br><br>TB screening required prior to administration |
| **ILUMYA ® (TILDRAKIZUMAB) – (APPROVED 2018)** | PsO: (SC) 100 mg at weeks 0 and 4, followed by every 12 weeks thereafter | Selectively binds to IL23 and inhibits receptor binding. Inhibits release of proinflammatory cytokines and chemokines. | Previous hypersensitivity reaction to ILumya or any of its excipients | Increase risks for infections<br><br>TB screening required prior to administration |

Abbreviations: SC-subcutaneous, PsA-psoriatic arthritis, PsO- plaque psoriasis

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**References:**

1. Singh JA, Guyatt G, Ogdie A, et al. 2018 American College of Rheumatology/National Psoriasis Foundation Guideline for the Treatment of Psoriatic Arthritis [published online November 30, 2018]. *Arthritis Rheumatol*. doi: 10.1002/art.40726
2. Fudin J. Monoclonal Antibodies: How to Navigate the Naming Scheme. *Pharmacy Times*. 2015.
3. Monoclonal Antibodies. United States Adopted Names. *AMA*. Accessed at https://www.ama-assn.org/about/united-states-adopted-names/monoclonal-antibodies
4. Parren, Paul & Carter, Penni & Plückthun, Andreas. Changes to International Non-Proprietary Names for antibody therapeutics 2017 and beyond –Of mice, men and more…. *mAbs.* 2017. 9(6):00-00
5. Chan CE, Yeoung Chan AH, Hanson BJ, Ooi EE. The Use of Antibodies in the Treatment of Infectious Diseases. SingMJ. 2009.
6. Eli Lilly and Company. *Taltz Prescribing Information 2019*; Eli Lilly and Company: Indianapolis, IN, USA, 2018.
7. Valeant Pharmaceuticals LLC. *Siliq Prescribing Information 2017*; Valeant Pharmaceuticals North America: Bridgewater, NJ, USA, 2017.
8. Janssen Biotech Inc. *Tremfya Prescribing Information 2017*; Janssen Biotech: Horsham, PA, USA, 2017.
9. AbbVie Inc. *Skyrizi Prescribing Information 2019*; Abbvie Inc: North Chicago, IL, USA, 2019.
10. Merck & Co. Inc. *Ilumya Prescribing Information 2018*; Merck & Co: Whitehouse Station, NJ, USA, 2018.