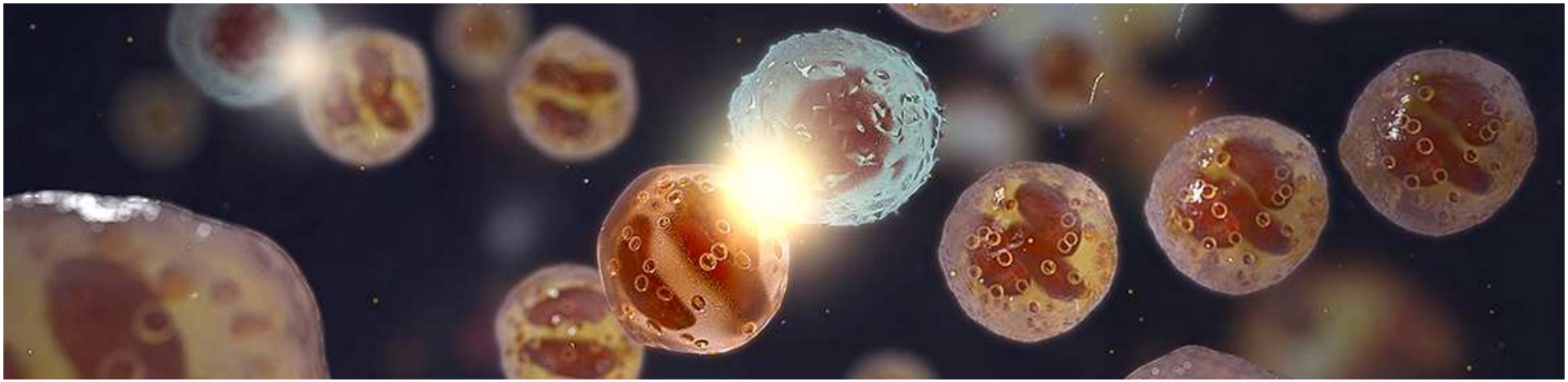
AstraZeneca
Inspiring scientific leadership: moving towards precision medicine

Silvia Boarino
Sr Medical Adviser Respiratory



Respiratory Vision

To be the industry leader in innovative inhaled and targeted therapies to help address the unmet medical needs of people with asthma and COPD

COPD = chronic obstructive pulmonary disease.

As a Leader in Respiratory Research and Therapy, AstraZeneca Aims to Deliver Across Three Dimensions

PHC = personalized health care.

Respiratory Pipeline: Small and Large Molecules (Biologics)

Partnered with Dynavax Technologies Corporation[1]; Synairgen Plc[2]; Amgen Inc.[3]; Kyowa Hakko Kirin Co., Ltd.[4]

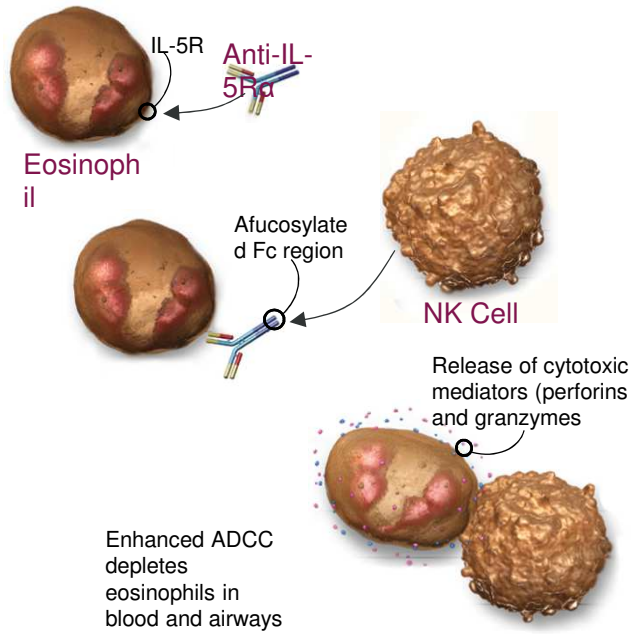
AstraZeneca Development Pipeline, June 30, 2016. Accessed August 16, 2016. This information is subject to change.

Benralizumab (anti-eosinophil) Large Molecule[1]

Benralizumab

- Benralizumab (MEDI-563) is an anti-eosinophil, humanized anti-IL-5 receptor alpha (anti-IL-5Rα) monoclonal antibody[2,3]
- Benralizumab is designed to bind to the alpha chain of the interleukin-5 receptor (IL-5R), enabling effector cells to induce the apoptosis of and thereby depleting eosinophils via antibody-dependent cell-mediated cytotoxicity (ADCC)[3,4]
- The constant region (Fc) of benralizumab is afucosylated, leading to increased affinity for the Fc gamma receptor 3 (FcγRIIIa) found on the surface of effector cells, such as natural killer cells (NK)[4]
- Benralizumab is currently in Phase III clinical development for severe asthma and COPD[2]

Anti-Eosinophil Mechanism[1,2]



COPD = chronic obstructive pulmonary disease.

1. Busse WW et al. In: Lee JJ et al. eds. Eosinophils in Health and Disease. London, UK:Elsevier;2013:587-591; 2. AstraZeneca Pipeline. Accessed June 15, 2016; 3. Molfino NA et al. *Clin Exp Allergy*. 2012;42:712-737; 4. Ghazi A et al. *Expert Opin Biol Ther*. 2012;12:113-118.


THE SMARTEST PART
OF OUR ASTHMA CONTROL
ISN'T THE MEDICATION.
IT'S THE PATIENT.
For 25 years we have tried to
change patients' behaviour to suit asthma treatment…
It's time to change asthma treatment to suit patients' behaviour.

Turbu+™ Smart Device

1

Inhalation medication BUD/FORM Turbuhaler

2

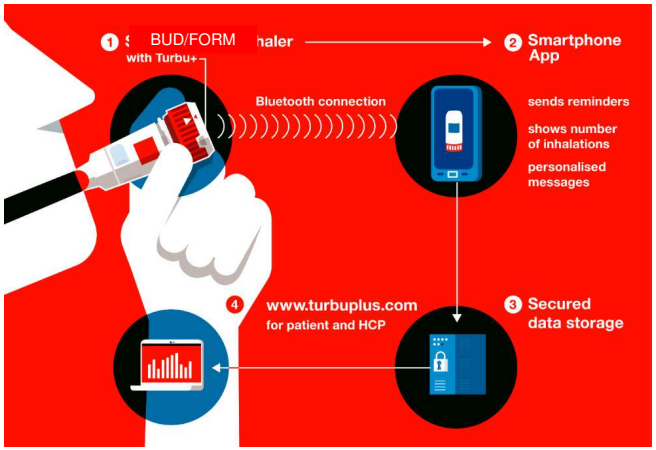
attached to an electronic medical device called **Turbu+**

3

and a **Turbu+** Android or iPhone app

4

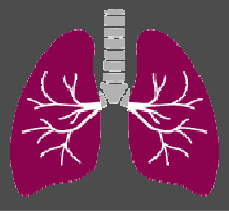
and a secure personal web portal



- Empowering patients by providing them insight into their treatment pattern and inhalation history
- Reminding patients to take the number of inhalations prescribed
- Supporting patients in their self management based on their condition and individual behaviours
- Supporting the interaction between HCPs and patients

SYGMA: Potential Solutions for Patients with Mild Asthma

- **Between 50% and 75% of the 300 million people worldwide who suffer from asthma have mild asthma. Many patients with mild asthma are uncontrolled and are at risk of severe exacerbations.[3]**



In the future it might even be possible to control asthma entirely with PRN combination inhalers without maintenance therapy, at least in patients with less severe disease." [2]

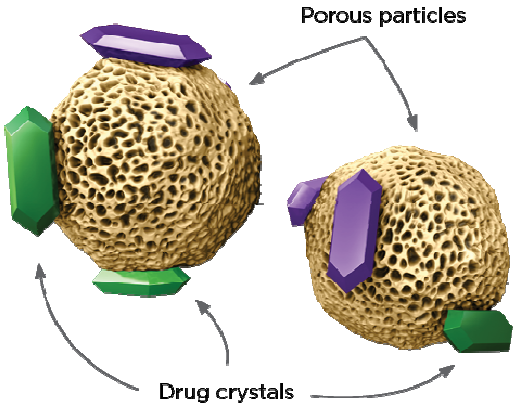
(CHEST 2009; 135:1628–1633)

- SYGMA1 aims to demonstrate Budesonide/Formoterol as needed **is superior to SABA as needed** and has **similar efficacy** to ICS plus SABA as needed by evaluating asthma control.
- Use of Budesonide/Formoterol as rescue medication may provide not only **symptom relief** but also timely intervention with an anti-inflammatory medication to **counteract the progression of the disease.**

Co-Suspension Technology

Low-density, porous, phospholipid particles

- Median aerodynamic diameter – suitable for respiratory delivery[1]
- Amphiphilic surface - reduces cohesion between particles[1]
- Associates with drug crystals of different sizes densities and solubilities ex vivo[1]
- Crystals of multiple drugs can be co-suspended with the porous particles[2]
- Designed to release drug at deposition site as phospholipid dissolves in lung fluid.[2] Phospholipid is an endogenous component of human lung surfactant[5]



PT003:

glycopyrronium/ formoterol fumarate[4]

Approved in the US

PT010:

glycopyrronium/formoterol fumarate/budesonide[4]

Asthma – Phase II

COPD - Phase III

COPD = chronic obstructive pulmonary disease.

1.Vehring R et al. *Langmuir.* 2012;28:15015-15023. 2. AstraZeneca press release. Publsihed April 25, 2016; 3. Quinn D et al. *Respir Med.* 2014;108:1327-1335; 4. AstraZeneca Pipeline. Accessed February 17, 2016.

Change and Opportunity

How can we work together to advance respiratory science and deliver the next generation of medicines and treatment approaches that patients need?


THANK YOU
FOR
YOUR
ATTENTION!
ANY QUESTIONS?