Tuberous Sclerosis Alliance

Tuberous Sclerosis Alliance
of Maryland

Neurological Issues, COVID-19, and TSC: What You Need to Know

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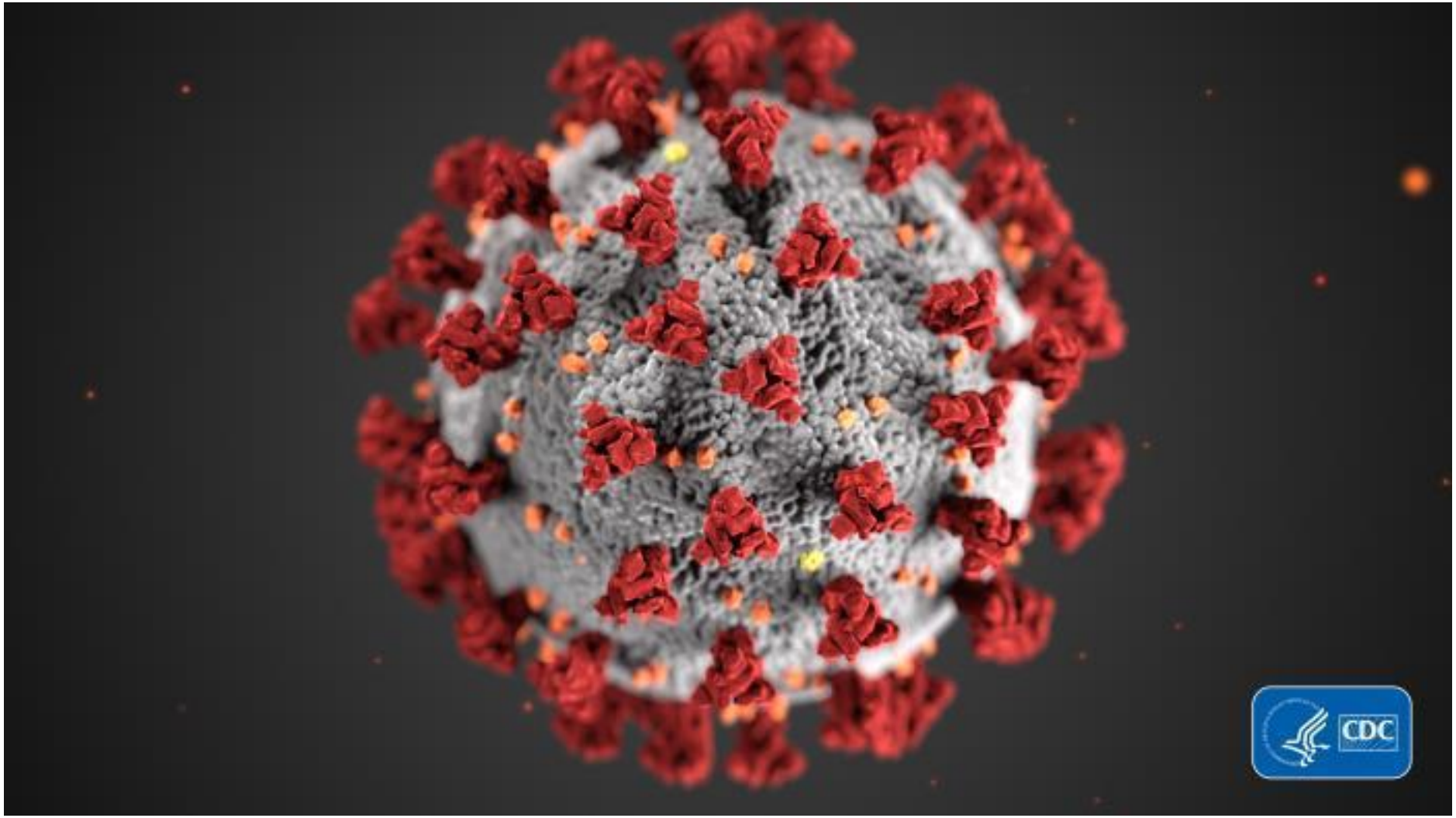
Severe Acute Respiratory syndrome coronavirus 2 (SARS-CoV-2)



Corona**vi**rus **d**isease 20**19** (COVID-19)

- COVID-19 infection is typically spread from one person to another via respiratory droplets produced during coughing and sneezing.
- COVID-19 infection may occur by touching a surface or object that has the virus on it and then touching the mouth, nose, or possibly their eyes.
- Time from exposure to onset of symptoms is generally between 2 and 14 days, with an average of 5 days.

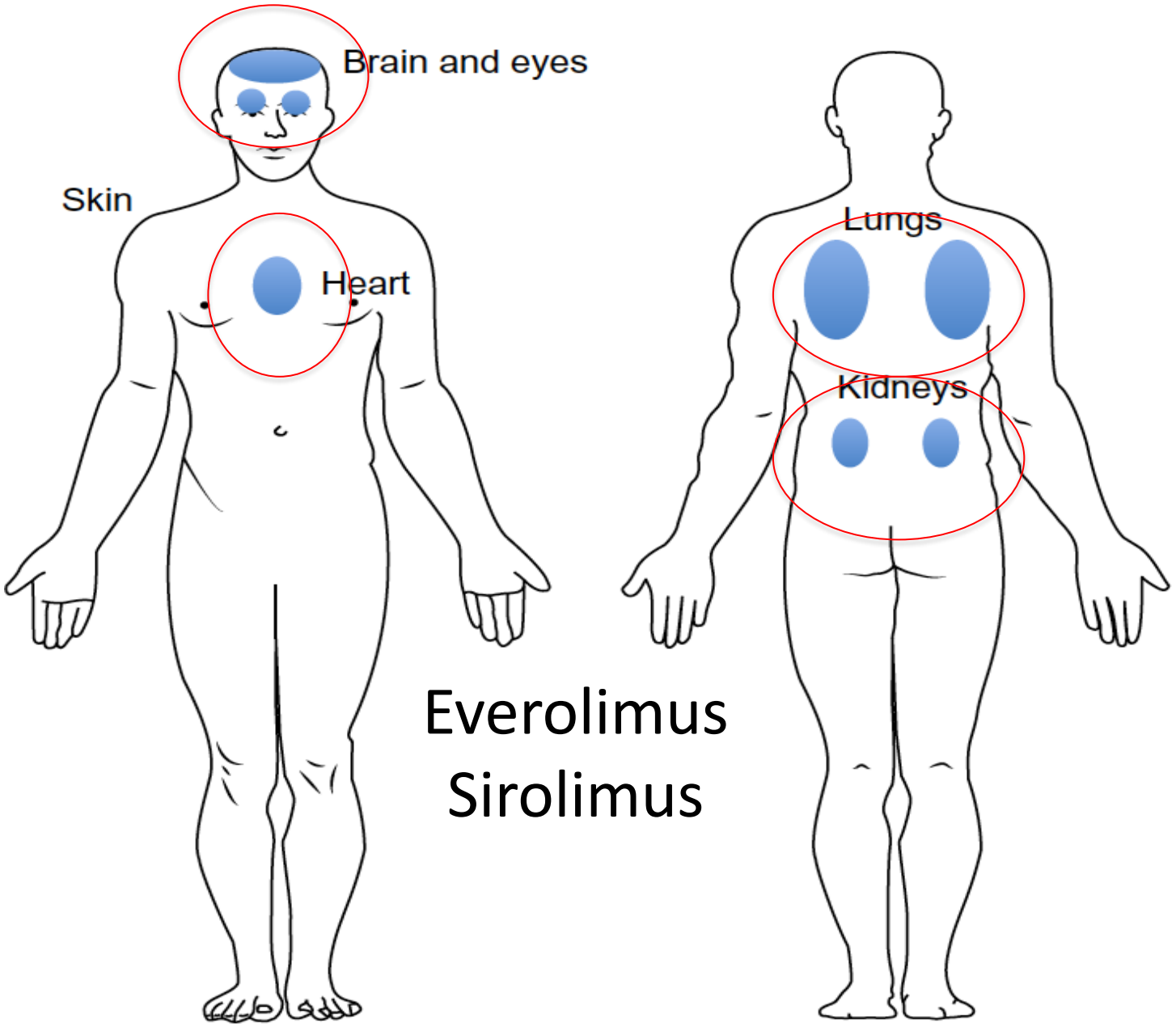
COVID-19

- Infection may be asymptomatic
- Many develop flu-like symptoms including:
  -fever
  -dry cough
  -shortness of breath
- Less commonly, patients will experience:
  -sneezing
  -runny nose
  -sore throat
- Gastrointestinal symptoms may include:
  -diarrhea
  -vomiting

Individuals at Risk for Severe COVID-19

- Older patients >age 60
- Underlying illness:
  -cardiovascular disease
  -lung disease
  -hypertension
  -liver disease
  -kidney disease
  -cancer
  -immunosuppression
- COVID-19 may also cause lasting damage to the lungs, heart, liver, kidneys

Primary Organ Systems Affected in TSC

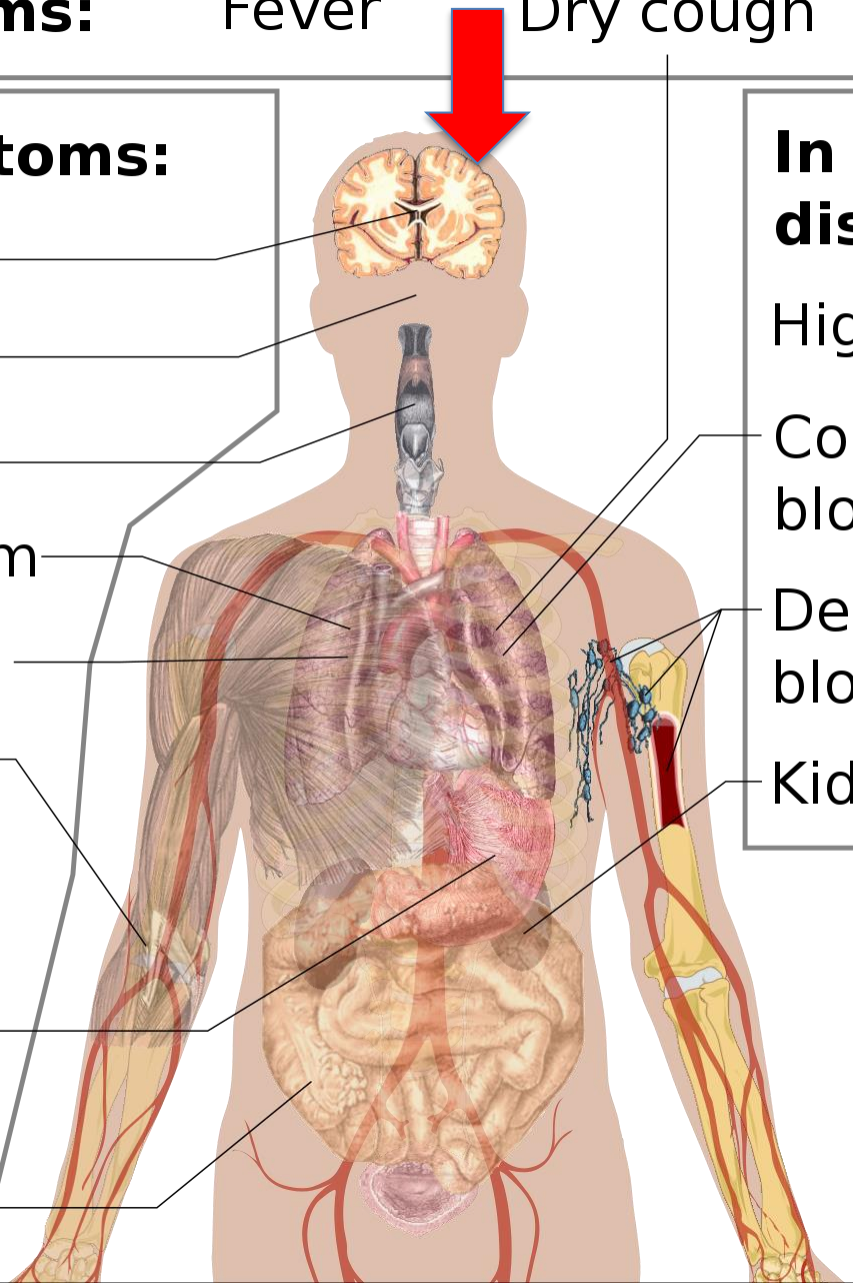


Everolimus
Sirolimus

Common symptoms: Fever Dry cough Fatigue

Uncommon symptoms:

- Headache
- Nasal congestion
- Sore throat
- Coughing up sputum
- Shortness of breath
- Pain in muscles or joints
- Chills
- Nausea and/or vomiting
- Diarrhoea



In severe disease:

- High fever
- Coughing up blood
- Decreased white blood cells
- Kidney failure

Neurological Issues in COVID-19: Neuro-Covid-19

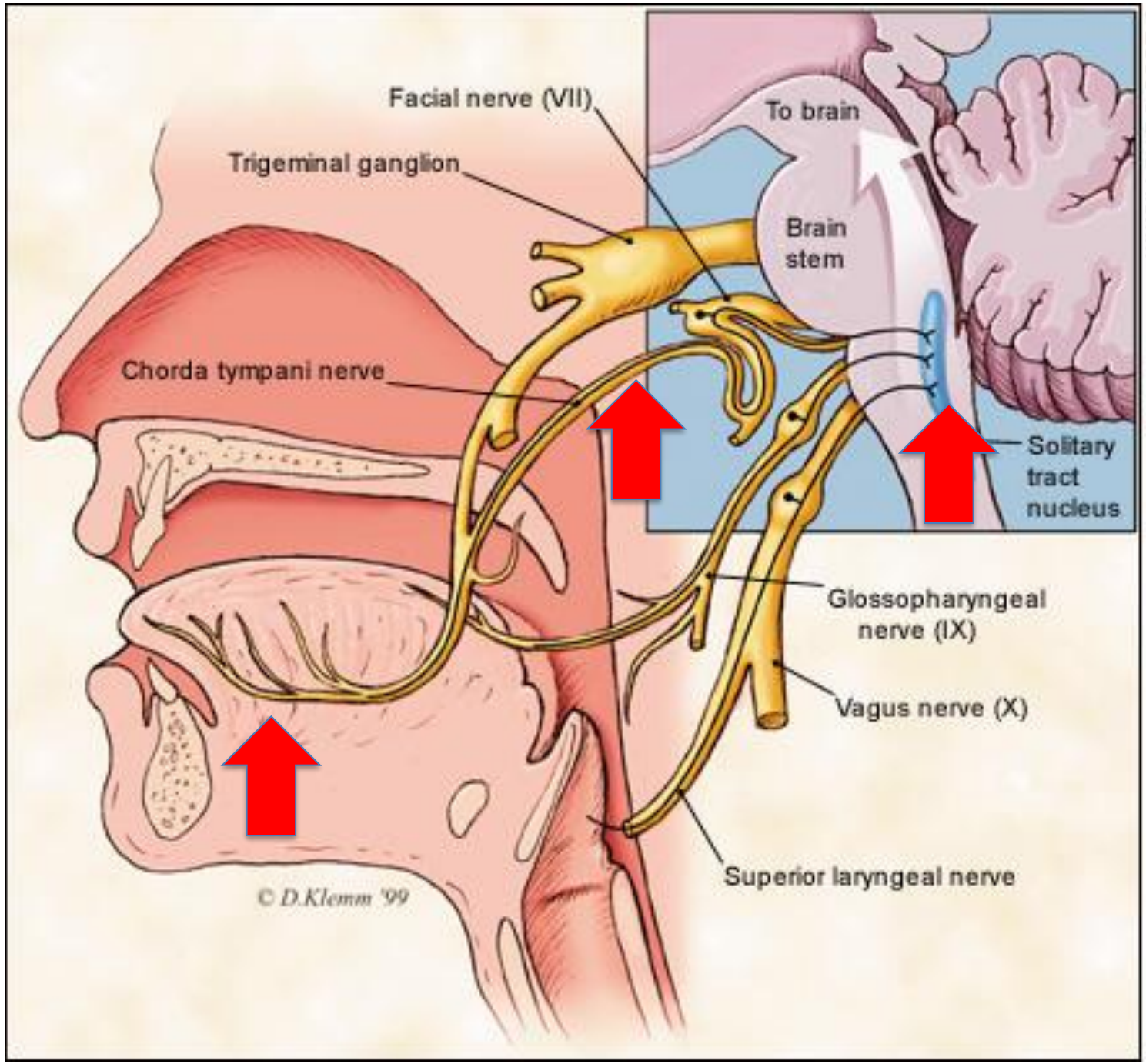
- Much learned from experiences in:
  -China, Italy, USA
- Loss of Taste and Smell
- Stroke
- Headache/Dizziness
- Altered mental status
- Peripheral neuropathy
- Weakness (deconditioning)
- Overall more common in severe infection
  -requiring hospitalization
  -but can be seen in mild COVID-19

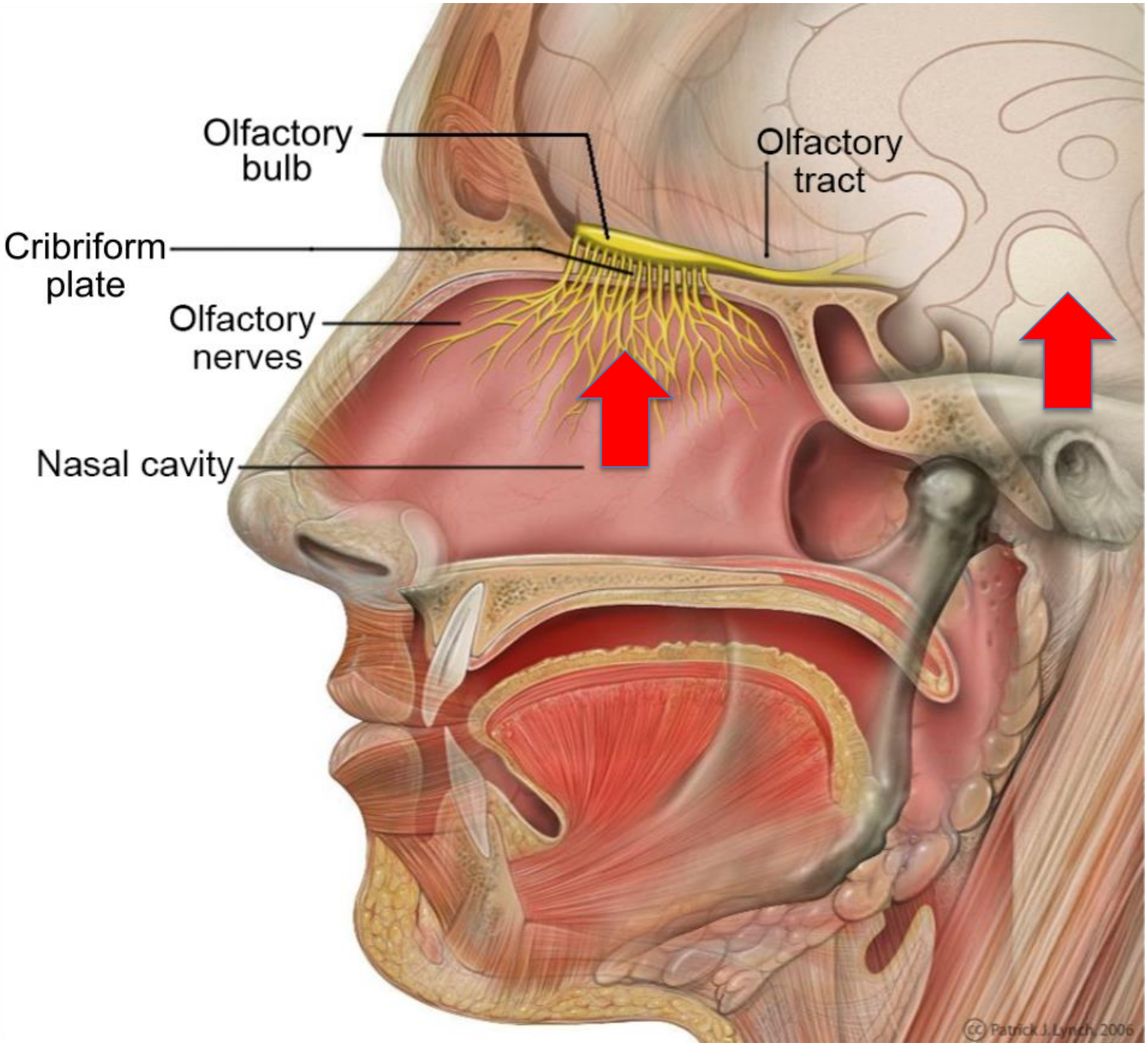
Carod-Artal, 2020

Alterations in Taste and Smell in COVID-19

- Loss of taste sensation (ageusia) 12% - 71%
  -may be reduced sense of taste
- Loss of smell sensation (anosmia) 11% - 68%
  -may be reduced sense of smell
- May occur with no or mild symptoms
- Not due to nasal congestion
- Onset from 1-3 days prior to hospitalization
- Loss of smell sensation correlates with:
  -detection of SARS-CoV2 virus (positive test)
- Resolution of symptoms within days to weeks

Beltran, 2020; Mao, 2020; Yan, 2020




Olfactory bulb
Olfactory tract
Cribriform plate
Olfactory nerves
Nasal cavity
© Patrick J. Lynch, 2006

Headache and COVID-19

- Throbbing, pressure, aching
- Frontal, occipital, base of neck
- 12-40% of cases
- Severe > mild COVID-19
- Many also report feeling:
  -dizzy
  -nauseated
  -extreme fatigue

Li, 2020; Marcolin, 2020; Zhu, 2020

Altered mental status in COVID-19

- Lethargy, confusion, delerium
- Reduced level of consciousness, coma
- Seen in severe COVID-19
- May be due to:
  -SARSCoV2 infection in brain
  -circulating cytokines
  -fever
  -low blood oxygen levels

Stroke and COVID-19

- Incidence is not fully known (estimates 7-16%)
- Observed in severe cases with comorbidities:
  -hypertension, diabetes, heart disease, and obesity, all risk factors for stroke
- Observed in young people <age 50:
  -with no risk factors
- Symptoms of stroke:
  -weakness (paralysis)
  -loss of speech
  -loss of vision
- Occur within 1 day-2 weeks of COVID-19 symptoms

Lodigiani, 2020; Zhou, 2020

Stroke and COVID-19

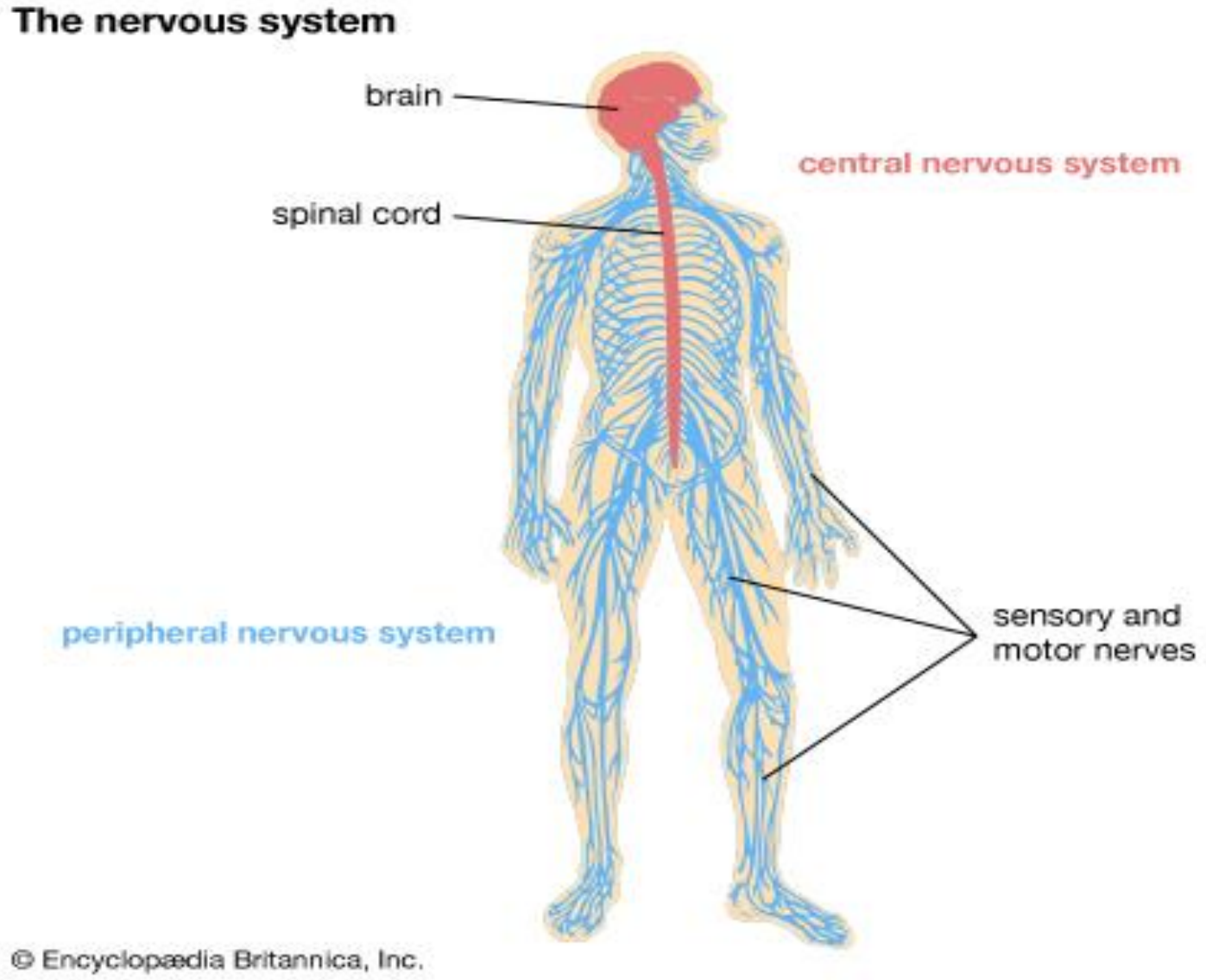
- SARSCoV2 may cause:
  -excessive clotting of blood
  -formation of small and large clots
- May be due to SARSCoV2 effects on:
  -arteries in the brain
  -changes in blood flow to the brain

Hess, 2020

Seizures

- Incidental case reports in select patients
- Lu et al., 2020 (Wuhan experience)
  -no increased risk of seizures in COVID-19
- Possible worsening of seizures with:
  -fever
  -systemic illness, circulating cytokines
  -antibiotics
  -low blood oxygen levels

Peripheral Neuropathy



Gutierrez-Ortiz, 2020

Questions about Neuro-COVID-19?

- Does SARSCoV2 enter the brain?
- Does SARSCoV2 infect nerve cells in the brain?
- Does SARSCoV2 infect peripheral nerve cells?
- Is SARSCoV2 detected in cerebrospinal fluid?
- Can SARSCoV2 infection cause seizures?

Questions about Neuro-COVID-19 and TSC?

- Does TSC put me at greater risk for COVID-19?
- Does everolimus/sirolimus put me at greater risk for COVID-19?
- Should I keep taking everolimus/sirolimus for epilepsy or SEGA?
- Should I travel to doctor's visits for TSC?
- What happens if I develop COVID-19?
- Can COVID-19 make my seizures worse?
- Will COVID-19 affect SEGA growth?
- Will COVID-19 affect autism?

QUESTIONS?

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