

A woman with long brown hair is smiling and looking down at two young children. The child on the left is a toddler with blonde hair and a red bow, wearing a white t-shirt and eating a small, round, golden-brown cookie. The child on the right is a young boy with brown hair, wearing a white t-shirt with colorful animal prints, also holding a similar cookie. The background is a soft-focus indoor setting.

Plant-Based Juniors:

GUIDENCE FOR THRIVING,
PLANT-BASED CHILDREN

ALEX CASPERO MA, RD

BENEFITS OF PLANT-RICH DIETS

- Decreased risk of heart disease
- Decreased risk of type 2 diabetes
- Decreased risk of some cancers
- Lower cholesterol levels
- Lower blood pressure
- Healthy BMI



BENEFITS OF PLANT-RICH DIETS FOR CHILDREN

- Vegetarian children have higher fruit/vegetable intakes than their non-vegetarian peers
- Lower intakes of cholesterol
- Lower cholesterol levels
- Potentially reduced risk of chronic disease (PDAY)
- Lifelong dietary habits are established at a young age. Childhood offers the unique ability to form food preferences; early life exposures can contribute to positive health outcomes



COMMON CONCERNS ABOUT PLANT-BASED DIETS FOR CHILDREN

- Inability to meet protein needs
- Reduced caloric density
- Low in important micronutrients: iron, zinc, calcium
- Deficiencies caused by cutting out dairy
- Safety of soy for endocrine/reproductive outcomes



Nutrient Status and Growth in Vegan Children

Review of 437 studies on vegan children and adults

Major Findings:

1. **Protein Intake.** VeChi study: Vegan (VN) exceed recommendations by 2.3x. Omnivorous calories predominantly through protein, fat, and added sugars. VN children more carbohydrates, including fiber.
2. **Calcium Intake.** VN children 52% of Ca intake, although this showed no impact on growth. A 2013 meta-analysis: children aged 1–18 years, 30%–57% had Ca intakes below the estimated average requirement.
3. **Vitamin D.** Vitamin D status is low in both omnivore & VN diets without supplementation.
4. **B12 Deficiency is only seen where supplementation or fortified foods are not used.**
5. **Calorie intake similar to omnivores children; though lower BMI with normal height**

IRON STATUS OF VEGETARIAN CHILDREN: A REVIEW OF LITERATURE

Objective: Review of iron status among vegetarian children and adolescents.

Methods: 13 studies from 9 different countries. Total number of participants in the studies ranged from 39 to 1,520.

Results: In all of the studies, vegetarian children's mean or median Hb level was above the value set as the deficiency criteria. In 5, vegetarian participants had a higher iron deficiency prevalence.

Conclusion: Inadequate iron status is a common nutritional problem among both children who follow vegetarian diet and those consuming non-vegetarian diets, although the problem seems to be considerably more prevalent among vegetarians.



ASSOCIATION BETWEEN NON-COW MILK CONSUMPTION & CHILDHOOD HEIGHT

OBJECTIVE

To determine whether there is an association between non-cow milk consumption and lower height in childhood.

RESULTS

There was a dose-dependent association between higher non-cow milk consumption and lower height. For each daily cup of non-cow milk consumed, children were 0.4cm shorter.

LIMITATIONS

We were unable to account for other dietary factors that may contribute to height because of data limitations. **Non-cow milk beverages vary in nutritional content, and we could not evaluate which non-cow milk beverages most influenced the observed relationship.**

EXPOSURE TO SOY-BASED FORMULA IN INFANCY & ENDOCRINOLOGICAL & REPRODUCTIVE OUTCOMES IN YOUNG ADULTHOOD

OBJECTIVE

To examine the association between infant exposure to soy formula and health in young adulthood, with an emphasis on reproductive health.

RESULTS

No statistically significant differences were observed between groups in either women or men for more than 30 outcomes.

CONCLUSIONS

Exposure to soy formula does not appear to lead to different general health or reproductive outcomes than exposure to cow milk formula.



Strom, 2001

CHILDHOOD SOY INTAKE & BREAST CANCER RISK IN ASIAN AMERICAN WOMEN

OBJECTIVE

To characterize the relative contributions of soy intake during childhood, adolescence, and adulthood and to evaluate whether soy is itself protective or merely an indicator of other Asian lifestyles that reduce breast cancer risk.

RESULTS

Comparing highest with lowest tertiles, the multivariate relative risks for childhood intake were noted in all three races, all three study sites, and women born in Asia and the United States.

CONCLUSIONS

Soy intake during childhood, adolescence, and adult life was associated with decreased breast cancer risk, with the strongest, most consistent effect for childhood intake.

“It is the position of the Academy of Nutrition and Dietetics that appropriately planned vegetarian, including vegan, diets are helpful, nutritionally adequate, and may provide health benefits for the prevention and treatment of certain diseases...for all stages of the cycle, including pregnancy, lactation, infancy, childhood, adolescence, older adulthood...”



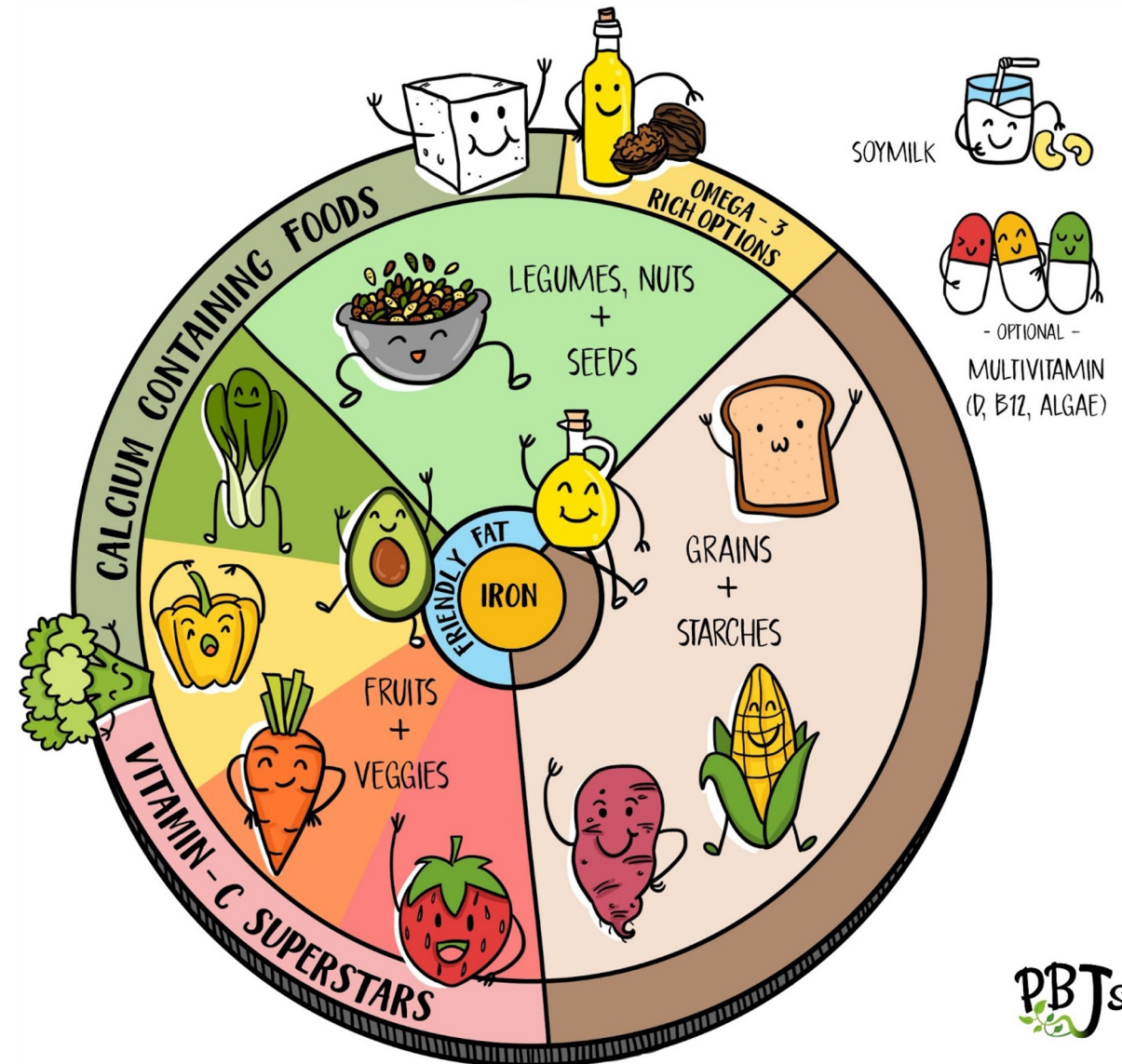


NUTRITIONAL CONSIDERATIONS FOR PLANT-BASED JUNIORS

THE "PB3 PLATE"

The PB3 Plate

- Balance Plate
 - Fruits + Vegetables
 - Nuts, Seeds + Legumes
 - Grains + Starches
- Energy Density
 - Only 1/3 plate F/V
 - Focus on fat
 - Soy milk with meals



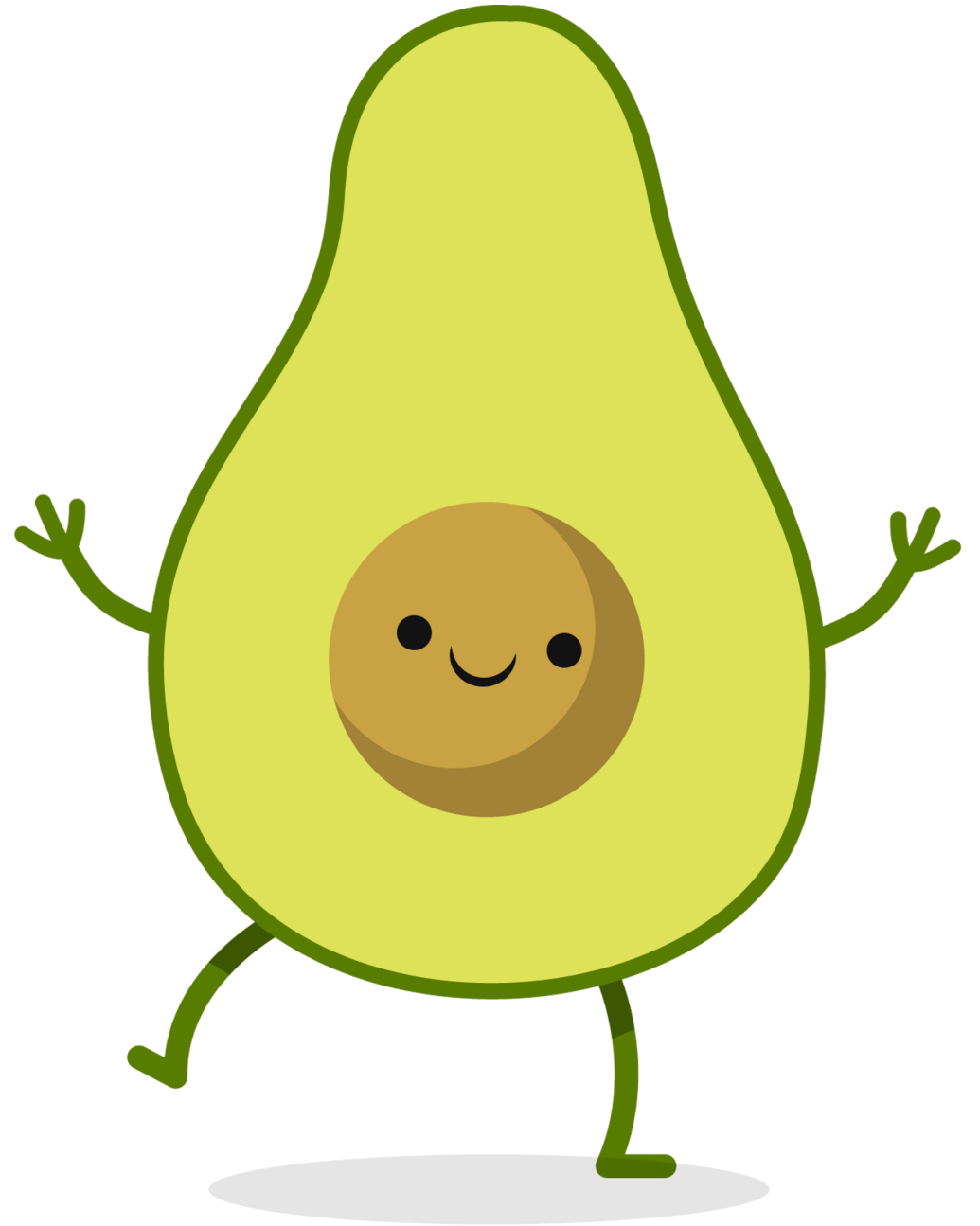


PROTEIN

- ~1g/kg
- The myth of “incomplete proteins”
- Sources: legumes, nuts, seeds, grains
 - 1 cup soy milk (8g)
 - ½ cup rolled oats (6g)
 - 1 tablespoon hemp seeds (3g)

FAT

- WHO recommendation:
 - 0-2 years: 35-40% of intake
 - 2+ years: 25-35% of intake
- Focus on essential fatty acids
LA + ALA
- Discourage oil-free, low-fat diets





DHA

- “Very long-chain” omega-3 fatty acid
- Essential for baby’s brain and eye development
- Accumulation in brain continues through first 2 years
- Sources: fish and eggs
- 1-10% conversion rate from ALA
- Low DHA in breast milk of vegan mothers
- Microalgae supplements

IRON

- RDA:
 - 1-3yo: 7 mg/day
 - 4-8yo: 10 mg/day
 - 9-13yo: 8mg/day
- ~8% of all children and infants are iron-deficient
- Heme vs. non-heme iron
- Sources: legumes, nuts, seeds, grains, leafy green vegetables, fortified cereals
- Needs increased by 1.8x
- Vitamin C increases absorption by 4-6x





EASY IRON + VITAMIN C COMBOS FOR PBJs

- Hummus mixed with sweet bell peppers
- Black beans tacos with salsa
- Bran flake cereal with frozen raspberries
- Wheat bread with almond butter + raspberry jam
- Spaghetti sauce with spinach and enriched pasta
- Avocado rolled in wheat germ
- Sautéed Swiss chard and tomatoes
- Tofu and green bell pepper stir-fry
- Edamame and orange slices for snack
- Lentil soup with tomatoes
- Dark chocolate and berries



ZINC

- RDA:
 - 1-3yo: 3 mg/day
 - 4-8yo: 5 mg/day
 - 9-13yo: 8 mg/day
- Vegan/vegetarian needs may be increased by 50%
- Sources: legumes, nuts, seeds, whole grains
- Focus on increasing bioavailability



CALCIUM

- RDA:
 - 1-3yo: 700 mg/day
 - 4-8yo: 1000 mg/day
 - 9-13yo: 1300 mg/day
- Bioavailability of plant-based foods compared to dairy
- Sources: legumes, soy foods, fortified products, cruciferous vegetables
- Other factors for healthy bones

NON-DAIRY MILK OPTIONS

- Convenient source of essential nutrients: vitamin A, calcium, vitamin D, protein, fat
- ~60-90% of world's population cannot consume dairy³⁴
- AAP lists soy milk as “nutritionally equivalent” to cow's milk³⁵
- Nut milks not recommended as primary beverage
- Recommend 2-3 cups daily





Milk	Whole Cow's fortified with Vitamin D	Reduced 2% milk fat Cow's Milk with fortified Vitamin A and D	Soy (Silk Unsweetened™)	Pea (Ripple Unsweetened™)	Almond (Silk Unsweetened™)	Rice (Rice Dream Unsweetened™)	Coconut Beverage (Silk Unsweetened™)	Oat (Oatly Original™)
Calories	150	122	80	80	30	70	40	120
Total Fat	8g	4g	4g	8g	2.5g	2.5	4g	5g
Saturated Fat	5g	2.7g	0.5g	0.5g	0g	0g	4g	0.5g
Polyunsaturated fat	-	0.1	2.5g	1g	0.5g	0.5g	-	-
Monounsaturated fat	-	0.6g	1g	3g	1.5g	1.5g	-	-
Cholesterol	36mg	20mg	0mg	0mg	0mg	0mg	0mg	0g
Potassium	380mg	390mg	350mg (7%)	405mg	170mg	10mg	310mg	-
Sodium	120mg	95mg	75mg	125mg	115mg	110mg	45mg	100mg
Carbohydrate	12g	12g	3g	<1g	1g	13g	2g	16g
Fiber	0g	0g	2g	<1g	0g	0g	0g	2g
Sugars (Naturally Occuring)	11g	12g	1g	0g	0g	<1g	0g	7g

VITAMIN D

- RDA:
 - <12mo: 400 IU/day (10 ug)
 - 1-3yr: 600 IU/day (15 ug)
- Common reasons for deficiency
- Sources: salmon, eggs, some specially grown mushrooms
- Breastfed babies: 400 IU/day
- Continued supplementation may be needed
- Vitamin D2 vs. Vitamin D3



B12

- RDA:
 - 6-12mo: 0.5 $\mu\text{g}/\text{day}$
 - 1-3yr: 0.9 $\mu\text{g}/\text{day}$
 - 4-8yo: 1.2 $\mu\text{g}/\text{day}$
 - 9-13yo: 1.8 $\mu\text{g}/\text{day}$
- B12 is the only nutrient that cannot be adequately obtained from a whole food, plant-based diet
- Absorption rates – need more than RDA for supplements or 2 doses
- Supplementation is recommended over fortified foods



IODINE

- RDA:
 - 7-12mo: 130 $\mu\text{g}/\text{day}$
 - 1-3yr: 90 $\mu\text{g}/\text{day}$
 - 4-8yo: 90 $\mu\text{g}/\text{day}$
 - 9-13yo: 120 $\mu\text{g}/\text{day}$
- Deficiency most common cause of acquired hypothyroidism worldwide
- Sources: dairy, seafood, iodized salt
- Non-iodized salts: sea salt, pink Himalayan salt
- Supplementation for plant-based kids





CHOLINE

- AI:
 - 6-12mo: 150 mg/day
 - 1-3yo: 200 mg/day
 - 4-8yo: 250 mg/day
 - 9-13yo: 375 mg/day
- Suboptimal intake in all populations
- Sources: eggs/animal products, wheat germ, quinoa, soy, broccoli
- Choline during pregnancy

SUPPLEMENTS OVERVIEW

B12 for all vegan and vegetarian children

- 6-11mo: 5-20 mcg/d
- 1-3yr: 10-40 mcg/d
- 4-8yr: 13-50 mcg/d
- 9-13yr: 20-75 mcg/d

Vitamin D

- Drops for infants – 400 IU/day
- Likely need to continue after weaning

Iodine

- ½ the RDA for vegan + dairy-free children

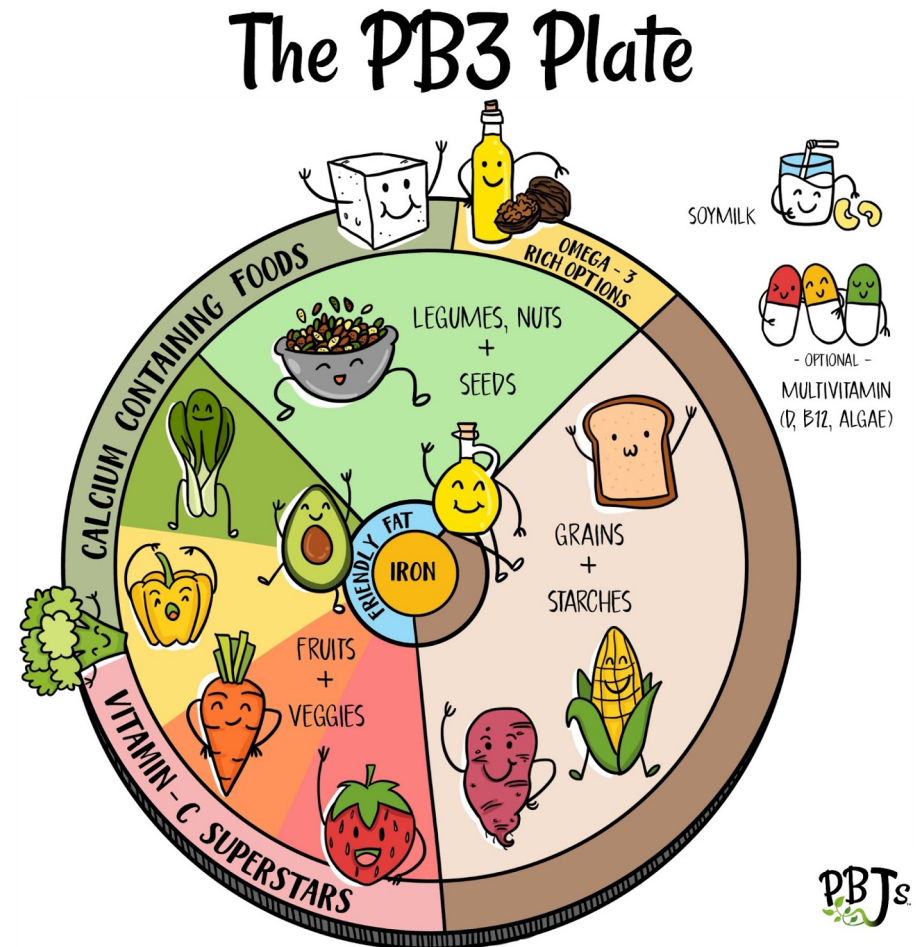
DHA/EPA potentially beneficial

- Drops added to bottles/beverages

Optional multivitamin for predominantly plant-based kids

NUTRITION CONSIDERATIONS FOR PLANT-BASED JUNIORS

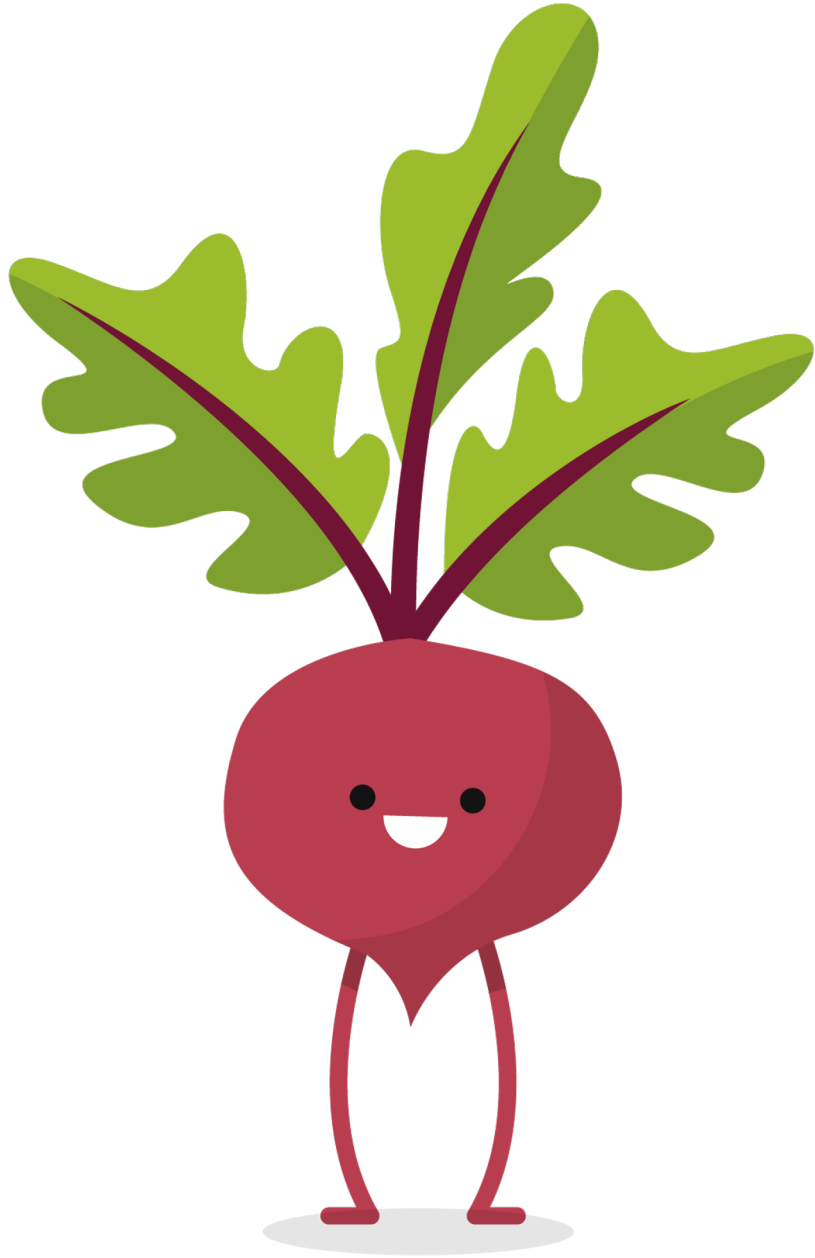
- Balance Plate
 - 1/3 plate fruits and vegetables
 - 2-3 servings legumes, nuts, seeds/day
- Focus on fat
- Pair iron rich foods w/ vitamin C to maximize absorption
- Supplement when needed
 - B12, DHA/EPA, Vitamin D





BARRIERS TO PLANT-BASED EATING

- Unsure “what to cook!” Unfamiliarity with new foods, like tofu, tempeh
- Misperceptions on getting enough nutrients, especially protein
- Lack of cooking confidence regarding beans, whole grains, tofu
- Fear that family won’t like the foods being offered



PLANT-FORWARD EATING

- Heavy on fruits, vegetables, whole grains and legumes
- Seeds and nuts
- Minimally processed
- Low use of animal foods
- High in the “good”: fiber, vitamins, minerals, phytochemicals, healthy fats
- Low in “bad”: saturated fat, cholesterol, sodium, toxins formed in cooking, curing and processing meats

WHAT'S FOR DINNER?

- Stock your pantry with familiar plant-friendly foods
- Consider what's on the table, not what's not
- Diversity through restriction; consider the vegetables, beans, grains that you already like but don't usually consider
- Learn how to properly cook tofu
- Visit blogs and find plant-based recipes



SIMPLE WINS FOR A MORE PLANT-RICH DIET

- Create simple plant-based family recipes
- Especially ones that can naturally be vegan
- Help educate on using legumes, soy goods and whole grains
- Focus on addition, not subtraction
- Encourage one-meal a day plant-based eating
- Encourage meatless meals a few times a week
- Shop for plants first
- Plan your menu around plants instead of meat



ROADMAP TO PLANT-BASED MEALS

Step 1: Enjoy

- Prepare plant-based meals you already know and like
- Pasta primavera, tofu and vegetable stir-fry, bean and vegetable burritos, vegetable soup

Step 2: Adapt

- Choose a favorite recipe and give it a plant-based makeover

Step 3: Explore

- Add in new plant-based foods and recipes
- Try tempeh, explore new plant-based recipes and cookbooks, try nutritional yeast on pizza, pasta instead of parmesan cheese





PLANT-FORWARD MEALS MADE EASY

- Use meat as a seasoning; up the ratio of plants and decrease meat
- Plan at least one night a week to try a new plant-based recipe
- Try ethnic foods – many cultures have plant-based meals
- Convert your favorite dishes: try eggplant Bolognese, lentil sloppy joes
- Try plant-based dairy products; non-dairy beverages easily swap in most recipes
- Cashew cream



PLANT-FORWARD FAMILY MEALS: LENTILS

Thinking of lentils as a ground beef alternative

- No soaking
- Either remove completely or add in a 1:1 ratio
- Lentil tacos
- Lentil 'meatloaf'
- Lentil 'meatballs'
- Skillet meals
- Shepherd's pie



PLANT-FORWARD FAMILY MEALS: BEANS

Think more than just soups and stews

- Black bean tacos (with options for favorite toppings)
- Bean salads (think of beans like chicken/beef for familiar salads the family already loves)
- Casseroles with $\frac{1}{2}$ beans in place of diced chicken or ground beef
- Chickpea salad in place of chicken/tuna salad

HOW TO TOFU!

- Decide what recipe you are going to make.
- Silken: softer; good for dressings, sauces, puddings. Great way to boost calcium and protein in smoothies.
- Baked tofu: premade tofu in different flavors. Thinly slice and use in wraps or cube and add to stir-fry. Minimal prep required.
- Firm/Extra firm: need to press first.
- Easy baked tofu: press tofu; cube and toss with olive oil, soy sauce, cornstarch and seasoning. Bake @ 400 for 25-30 minutes until crispy.





PLANT-FORWARD FAMILY MEALS: SOY

- Tofu nuggets – tear, then either bread or bake/pan-fry
- Grilled kebobs
- Tofu egg salad and chicken salad
- Edamame in stir-fry and fried rice
- Steamed edamame for snacks
- Tofu scramble for breakfast
- Baked tofu cubes in salads and bowls

PLANT-FORWARD SNACK IDEAS

- Savory “ants on a log”
 - Celery sticks with hummus, diced bell pepper, and chopped olives
- Edamame guacamole with veggies
 - Blend edamame into guacamole to up the protein content
- Date-nut balls and bars for snacking
- Smoothies
 - Add in nut butters/seeds for younger kids to increase fat
- Fancy toast/crackers
 - Hummus, diced veggies + hemp seeds
 - Nut butter, fruit chia jam + coconut shreds



PLANT-BASED ON A BUDGET

- All forms of fruits and vegetables count
- Education around dried vs. frozen
- Bulk bins
- Dried beans, lentils, nut butters
- DIY granola bars, nut and seed balls

Meals Under \$10

Stir-fry featuring brown rice, frozen edamame and frozen vegetables

Lentil Tacos using dried lentils, tortillas and toppings

Spaghetti & Meatballs:
homemade bean balls, pasta
and marinara sauce

Burrito Potatoes: sweet
potatoes stuffed with black
beans, salsa, guacamole

PLANT-BASED COOKING TIPS AND TRICKS

- Encourage kids to get in the kitchen with you
- Lead by example
- Try batch cooking
- Roast, broil, grill your veggies
- Explore ethnic foods
- Use herbs and spices
- Enroll in a plant-based cooking class
- Umami mimics the mouth feel of meat and cheese



Thank You!



Questions?

WEBSITE:

delishknowledge.com,
plantbasedjuniors.com

INSTAGRAM:

@delishknowledge
@plantbasedjuniors

FACEBOOK:

Delish Knowledge & Plant-Based
Juniors

TWITTER:

@delishknowledge @PBJNutrition

